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OF THE

HOUSE OF REPRESENTATIVES

FOR THE

FIRST SESSION OF THE FIFTIETH CONGRESS,

1887-'88.

IN TWENTY-SEVEN VOLUMES.





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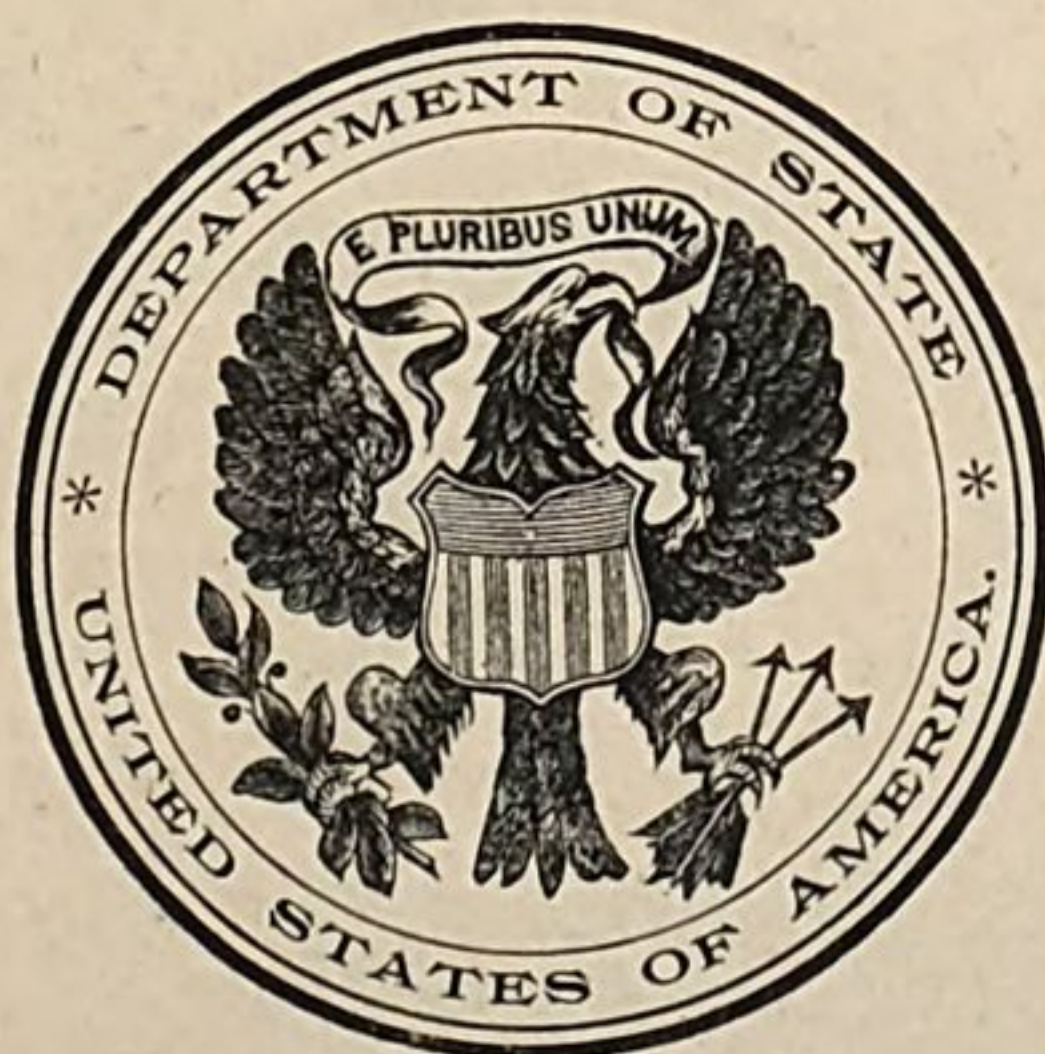
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CONSULAR REPORTS

ON

COMMERCE, MANUFACTURES, ETC.

No. 92.—APRIL, 1888.

CONSULAR PROTECTION IN MOROCCO.

[ENCLOSURE No. 8 IN DESPATCH No. 87, FROM CONSUL LEWIS, TANGIERS.]

In enclosing the list of protégés of this consulate, I have the honor to report that, following the instructions of your Department, both verbal and written, and the well known policy of our Government, I have been able since my arrival here in March last to entirely reorganize our system of consular protection, and to bring its operations entirely within the provisions of existing treaties. The number of persons that on my arrival here I found enjoying United States consular protection, official and unofficial, was upwards of 800. The names of the official protégés had been in part forwarded to your Department. The class of unofficial protégés was by far the larger, and a single example will suffice to show what form of protection they enjoyed. About a year ago the inhabitants of a village near Tangier, famed for boar hunts, having been ordered by the Sultan to pay a tax, refused to do so on the ground that their village was an American colony. On reference to this consulate the Basha was informed that the inhabitants of this village, numbering about 300, were employed as boaters, etc., at the boar hunts organized in connection with this consulate, and must therefore be exempt from taxation, as all employés of the consulate were under United States protection.

Unofficial protection under this consulate has been entirely abolished, and the natives enjoying United States consular protection are those (and only those) named in the list, copies of which I have forwarded to your Department and to the Moorish Minister for Foreign Affairs at Tangier, according to your instructions and the requirements of the treaty. The protégés comprised in this list consist of three classes—

United States; (3) Agents and buyers in Morocco for United States citizens engaged in wholesale importing into or exporting from Morocco.

I shall take the liberty of reporting fully to you my views on this question, prefacing my remarks by stating frankly that I came here strongly imbued with impressions unfavorable to the protégé system by reason of the scandalous abuses that had grown up under the system, and prepared to adopt sweeping measures of reform. But at that time I knew nothing of the total absence of law in the government of this country, and of the consequent necessity for some form of protection, a necessity which residence here cannot fail to demonstrate to an unprejudiced observer. As regards the first class of protégés mentioned—namely, natives employed in our consular service—it is necessary, in the absence of capable United States citizens, to employ at the various ports of Morocco native consular agents; and these, in order to maintain their proper influence and make their office respected by the local authorities, must, like their colleagues, the agents of other consulates, be assisted by subordinates as interpreters and messengers, for whom the protection of the United States is essential to the performance of their duties without fear or favor. The protection of these men is adequately provided for by the treaties and subsequent concessions.

The second class of protégés, above referred to, is composed of former employés. These are men who, as consular agents or interpreters, have merited the gratitude of our Government. Should those who have thus served us in the past be seen to suffer from the discontinuance of their protection at the close of their service, it would be difficult for us in the future to secure any suitable subordinates from the native population of Morocco, their task at best not being an easy one to perform. An old Moor, who has been occasionally employed without protection to write in Arabic official communications from the consulate to the Sultan, has preferred rather to lose his employment than to write, even in my name, anything affecting influential men ministers of the Sultan. I have been forced on several occasions into complaining to His Sheriffian Majesty of the systematic obstructions and delays interposed by the Moorish Minister of Foreign Affairs. This official, whose salary is \$300 a year, could not live if all the consular abuses in Morocco were done away with, so that his support of my efforts to reform could hardly be expected. The minister for foreign affairs in Morocco, it must be understood, is not clothed with the power and authority of a secretary of state for foreign affairs of a civilized country; consequently all matters of importance have to be submitted to the Sultan, who retains in his own hands the control of most of the affairs entrusted in civilized countries to a minister.

The protection, therefore, of persons employed in the important work of the consulate, cannot well be dispensed with, and those

The third class of protégés, the agents and buyers for American importers or exporters, is one which will increase or decrease as business with Morocco fluctuates. The list being subject to frequent changes a protégé of to-day may revert to Moorish subjection to-morrow. It is in relation to this class that abuses have been most rife, and that the present treaties are defective. A native of Morocco who has fraudulently or otherwise obtained United States naturalization may return to Morocco and reside here for a period of five years, engaging in the business of importing or exporting at times, but nominally, and frequently only with Gibraltar, Cadiz and Malaga, and still claim under present treaties the privilege of having protected for him two agents at every port of Morocco; and it is by no means uncommon for the principal to be salaried by his employé; whereas a *bona fide* business enterprise of however great magnitude is hampered in Morocco by its inability to employ more than two protected agents at each port. Without protection it would be absolutely impossible for an American firm to introduce our products here, or to export from Morocco raw materials. From the unbounded rapacity, coupled with the irresponsible power of the native governors, no unprotected native can be safely entrusted with any person's money or property; and protection in this case is as much the protection of the Sultan against his own corrupt officials as of the foreign merchant; for abolition of protection would be followed by a series of abuses far worse than anything previously known in Morocco, and imaginary as well as actual robberies and assaults would be the basis of endless claims of foreigners which are seldom possible when agents are protected by honest representatives of foreign governments.

The continuance of consular protection does not involve any expense to the United States, as the consular court more than pays its way. Even were protection abolished, the consular court would have to be maintained so long as there were any interests of United States citizens in this country, as those interests could never be left to the mercy of the corrupt and venial local judges administering Mohammodan law which excludes the evidence of any Christian.

The only reasonable objection that the Sultan of Morocco can have to protection (so long as his subjects hold intercourse with foreigners), is that his revenues are interfered with. To meet this objection I would respectfully recommend, that in any future revision of the Treaties, all foreign subjects and protégés residing in Morocco should be made liable to pay some certain and regular taxes to the Sultan to be agreed upon by all the Powers, and to be collected by the various consulates from those under their respective jurisdictions, and to be transmitted by the consul to the Sultan, so that His Majesty's Exchequer might receive the full benefit free from the well-known peculations of his subordinates, and the tax payers be free from any attempts at extortion. But it would obviously be unfair for the dependents of any nation to be

A few years ago, in response to the Sultan's complaint, the taxes claimed by him were actually collected by Her Britannic Majesty's officials from all British subjects and protégés, and the Sultan was notified that the sum of these taxes would be paid to him when like taxes were paid by the subjects of other powers. The first nation to decline to pay was Spain.

I would also suggest that some rules might with advantage be laid down by the Department of State to further regulate the granting of protection to the native agents of United States merchants, so as to make such protection obtainable only for the purpose of exporting from Morocco to the United States or *vice versa*, and so as to prevent agents from acquiring United States consular protection for the purpose of carrying on commerce with other foreign countries exclusively; and also, to prevent the appointment of agents from being made a traffic of, for the sole purpose of getting for merely nominal agents the benefits and exemptions of protection; and that such rules should be sufficiently precise as to leave no option with the consul that would lay him open to the possibility of a charge of favoritism.

If these two points could be adjusted it would be safer to leave intact in other respects the present Treaties, the result of a century's experience, rather than incur the risks of new Treaties proving defective or impracticable risks, amounting in an unchangeable country like this, almost to a certainty.

THE RUSSIAN PETROLEUM TRADE.*

The production of crude petroleum in Russia in the past year shows a large increase over any former year. In a previous report from this consular agency you were informed that no attempt was made to keep any accurate record of crude production at Baku, but the amount of production was estimated from the output of refined oil and illuminating distillate, of which fairly correct statistics are obtainable, upon a basis of $3\frac{1}{2}$ gallons crude for every gallon of the aforesaid products, to which is added the crude oil shipped. In this manner it is ascertained that the crude oil production in 1887 was over 45,000 barrels, of 40 gallons, for every day in the year, *i. e.*, the amount of crude used was over 45,000 barrels per day, and no one knows how much was lost, but there is no doubt that the loss was at least 20 per cent, and that the actual amount of crude taken from the ground during the year was nearer 55,000 barrels per day than 45,000. Of course, 20 per cent allowance for oil wasted will seem to an American to be very liberal; but if the manner in which oil is conducted to reservoirs from wells, the construction of reservoirs (described in a previous report), and the great number of

if we are considered or understood, this estimate will not appear so much

and the great productiveness of some of them. From one well it is said that more than 1,000,000 barrels were lost. This well, called the Mining Company well, was struck in August at a depth of 790 feet, and flowed the full size of the pipe (12 inches) to a height of 200 feet above the derrick for sixty-nine days. It was some days before the oil from it could be directed into reservoirs, and then there were no reservoirs of sufficient capacity to hold its production, and notwithstanding nearly all the Baku refiners connected their pipe lines to the reservoirs into which the oil was going, and kept their pumps going day and night, the whole country seemed to be overflowed with the oil, and there is no doubt that at least half its production was lost. The lowest estimate I have heard of the production of this well for the sixty-nine days is 3,000,000 barrels, and had the well flowed only oil this would be very reasonable, but it produced much more sand proportionately than the average Baku well, although all wells there produce immense quantities of sand with the oil. Some one-story stone buildings about 15 feet high, within a hundred yards of the well, were completely buried out of sight in sand from the well, and an area of probably ten acres around the well was covered from 1 to 15 feet with sand. The production of the well, after sixty-nine days, declined to 200 or 300 barrels per day, and all the efforts to make it produce profitably again have been unsuccessful.

There has been no new territory discovered in the past year, and very little effort has been made to find any, notwithstanding the fact that the theory advanced by some of Baku's eminent scientists that the complete exhaustion of the present developed territory is very near at hand, seems to be gaining supporters. One of these scientific gentlemen now says that the Balakhani-Sabunchi territory will not last more than three years, in which opinion it is said he is backed by some of the people having the heaviest financial interests in the trade.

But the support given to this idea by those financially interested is apparently not strong, costing nothing, and the sincerity of it is open to doubt; because, notwithstanding that the exhaustion of this territory before new territory is discovered may mean financial ruin to all the refiners, they make no effort to find other territory. The Baku geologists who prophecy the early exhaustion of the territory make a very plausible showing of figures, basing their estimates upon past production, increasing depth of drilling, etc. But the depth of the last oil-bearing stratum, and the number of such wells as that of the Mining Company that may be found are unknown quantities in the very interesting and important problem of the future production of petroleum in Russia.

Owing to the large production the price of crude at wells was very low the whole of the past year, the extremes being $1\frac{3}{4}$ to $7\frac{1}{4}$ cents per barrel of 40 gallons, but the average for the year was not more than $3\frac{1}{2}$ cents per barrel. At present the price is between $1\frac{1}{2}$ and $2\frac{1}{2}$ cents per barrel.

to Volga navigation being closed, but does not seem to be due to a scarcity of oil, because there are many good wells at Balakhini and Sabunchi, although no very large ones according to native ideas.

FREIGHTS AND TRANSPORTATION.

The refining capacity at Baku, owing to the fact that the business was very profitable, was materially increased during the year. The limited transportation facilities of the railway to Batoum maintained a heavy premium upon tank-car capacity for Batoum shipment, and a syndicate formed for the purpose of controlling home markets, insured a fair price for Caspian Sea shipments. These circumstances, together with the low price of crude, gave the refiners a margin of $\frac{1}{4}$ to $\frac{1}{2}$ cent per gallon on Caspian Sea shipments, and from 1 to $1\frac{1}{4}$ cents per gallon upon refined shipped to Batoum. The last allotment of tank-cars to refiners (made regularly by a committee formed for that purpose to secure equal distribution) is for the first three months in this year, and shows 149 refineries, with an aggregate annual capacity of 625,000,000 gallons refined oil. This estimate of capacity was made for the distribution of tank-cars for Batoum shipment, the refiners receiving tank-cars in proportion to their capacity; and as the heavy premium upon tank-cars accrues to refiners' benefit, they naturally made the best possible showing, so that there is little doubt that it is greatly exaggerated. But as the shipment of refined oil and distillate from Baku in 1887 did not exceed 200,000,000 gallons, there is also no doubt whatever that the refining possibilities of Baku are very much in excess of present requirements.

With an apparently unlimited supply of crude oil, so great a refining capacity and a profitable market for refined, it is clear that the limited transportation facilities of the railway are the chief obstruction to a rapid increase of export. Since December, 1886, railway transportation has entirely governed the price of oil at Batoum. Refined oil for Caspian Sea shipment during the past year has brought an average price f. o. b. Baku of about $1\frac{3}{10}$ cents per gallon, while the same quality of oil f. o. b. cars for Batoum averaged $2\frac{3}{10}$ cents per gallon. At the beginning of 1887 the railway company had 1,250 tank cars in service, and there were no private tank cars on the road. The price for refined f. o. b. cars at Baku then reached $3\frac{1}{2}$ cents per gallon, a premium of almost 2 cents per gallon on tank-car capacity. This encouraged refiners to put cars of their own upon the railway, and permission was granted refiners by the government railway control to place over 4,000 private tank-cars upon the road. Notwithstanding the protests of the railway management that they could not move promptly and regularly more than 500 or 600 private tank-cars, over 1,000 were put in service before December 1st; 500 more are due before March 1st, and owing to a great increase in the volume of grain freights (due to depressed condition of the

situation here is exactly the opposite of a year ago, when there was no oil here, and a demand for much more than the railway could deliver, for now the Batoum tankage, aggregating about 23,000,000 gallons, is about full, and the monthly receipts here are probably 3,000,000 to 4,000,000 gallons in excess of the shipments, with little prospects of an early increase in export facilities, and a certainty of increased rail deliveries from the new tank-cars daily coming into use. Under such circumstances it is not at all surprising that the market seems weak, with a steady downward tendency; that sales a few days ago show a difference of less than $\frac{3}{4}$ cent between Caspian Sea and Batoum shipment at Baku, and that all talk of pipe lines over the Suram Pass for refined oil has ceased, notwithstanding permission was granted by the government ten months ago for five such lines, and all were to be constructed immediately. The increase in the oil carrying capacity of the railway might seem only temporary were it not for the fact that the work upon the Suram tunnel (the railway grade at this point, being 238 feet to the mile, has been the great obstruction to a greatly increased traffic) is progressing very rapidly, and I am assured upon the best possible authority that the tunnel and accompanying improvements can be completed by September or October, 1889. This will not only insure the permanency of the present carrying capacity of the railway, but will still further increase it.

A PROPOSED PIPE-LINE.

A pipe-line for crude, from the Caspian to the Black Sea, is and always will be a subject for the trade to discuss; but that it will ever get any further than talk I do not believe. The reports of Russian newspapers are fully as unreliable and conflicting regarding this matter. Within the past three months the newspapers have stated that a concession for a pipe-line would be granted soon; that the committee of ministers had decided not to grant such a concession; that they had granted the concession; that bonds had been filed by the acceptors of the concession; that by-laws and regulations of the company formed for the construction of the line had been approved by the ministry; that the Czar, upon final reference of the matter to him by the committee of ministers, decided that no concession for the construction of a crude pipe-line should be granted, and the last is that a concession has been granted to the head of Rothschilds' petroleum business for a crude pipe-line from Baku to Batoum. I shall leave it to those who are interested in the matter to select the truth from this mass of contradictions.

My attention has just been called to the following items from Russian newspapers of February 4:

According to the latest newspapers a final agreement between the larger Baku refiners engaged in the export of illuminating oils was concluded a few days ago for the purpose of constructing a pipe-line for refined oil from Mikhailovo over the Suram Pass on the Trans-Caucasian Railway to Kviril and thence to Batoum.

Paris firm of Rothschilds are based upon delusions. On the very best authority, the "Bourse News" has heard that the concession has been obtained by M. Ephreusie, the son-in-law of the Paris Rothschilds, who is at present endeavoring to raise the necessary capital for the enterprise, viz., 36,000,000 francs in Paris, but is meeting with no success.

This is the first allusion to a Suram pipe line for refined oil which I have seen or heard for several months, and as the project seems to have been revived, it will not be out of place to describe its nature.

As heretofore explained, the heavy grade on the railway over the Suram Pass has been considered to be the great obstruction to a material increase in the carrying capacity of the railway. About one year ago it occurred to the petroleum shippers that a pipe line for refined oil, about 38 miles in length, between the station Mikhailovo, at the east end of the pass, and Kviril, at the west end of the grade on the Trans-Caucasian Railway, would overcome quickly and economically the difficulties of the heavy grade, so that refined oil could be pumped from Mikhailovo to Kviril, and the capacity of the railway to and from these points would be probably three times as great as it possibly could be over the pass. Consequently permission was obtained from the Government for the construction of a number of such lines, with the understanding that all such permission might be revoked upon the completion of the Suram tunnel. At that time it was not believed that the tunnel could be completed inside of three or four years, and for some months it was asserted positively that at least two, and perhaps more, 5 or 6-inch pipe lines would be constructed at once. About three months ago, however, all talk about Suram pipe lines ceased, and it was generally believed that the unlooked-for increase in transportation by the addition of private tank-cars to the railway's rolling stock and the certainty of the early competition of the Suram tunnel had killed the projected pipe lines, and it is now exceedingly probable that the revival of these projects is only newspaper rumor. There is much more possibility of truth in the report regarding the concession for a pipe line for crude from Baku to the Black Sea.

TANKS, CANS AND CASES.

There are now regularly in the Batoum trade eleven tank steamers, with an aggregate annual carrying capacity to ports for which they are chartered, of about 70,000,000 gallons. The can and case manufacturing capacity of the port is at present not more than 30,000,000 gallons per year. The railway cars, apparently, deliver about 150,000,000 gallons per year, so that the tankage being full the difference, or 50,000,000 gallons, will have to be exported in barrels to keep up with receipts, and with present facilities that is impossible. It is reported that many new tank steamers are being built and there is no doubt that the can and case manufacturing

prices abroad, cannot doubt that these people will progress more rapidly now under circumstances equally as favorable as they were then unfavorable. Now tank steamers have reduced their freights to the minimum, and the recent shut-down movement among American producers, or other cause, has advanced prices all over Europe to such a figure that any one in commercial matters should be able to do a very profitable export business in Russian oil. The exporter has everything in his favor at present, for in addition to an advancing market abroad, he has a declining market to purchase upon, as it is not believed that the export from Batoum can be increased soon enough to prevent the wiping out of the tank-car premium, which means very cheap refined here. At present refined is quoted f. o. b. Batoum nominally at about $3\frac{2}{5}$ cents per gallon in bulk, and $\frac{7}{10}$ of a cent of this price is premium on tank-car capacity.

TAXATION OF OIL.

On January 27th (15th old style) the collection of an internal tax upon all illuminating products of petroleum manufactured in Russia was commenced.

Illuminating oils of a specific gravity, between .0730 and .0830, inclusive (at 60° Fahrenheit), and a temperature of flash under 113° Fahrenheit by the Abel-Penn apparatus, are subject to a tax of 40 kopecks per pood (at present rate of exchange about $3\frac{2}{5}$ cents per gallon). Refined of a specific gravity greater than .0830 to .0835, inclusive, and temperature of flash 113° F. and higher, pays 30 kopecks per pood (about $2\frac{1}{2}$ cents per gallon). Refined of a less specific gravity than .0830, but with temperature of flash higher than 113° F., is subject to the lower tax, *i. e.*, $2\frac{1}{2}$ cents per gallon. Refined of a lower temperature of flash than 81° F. is not allowed to be shipped from refineries. At the same time this excise was inaugurated the duty upon foreign illuminating oils was raised from 60 kopecks gold per pood to 1 rouble gold, *i. e.*, about $15\frac{1}{2}$ cents, per gallon. This excise upon Russian oil will be collected at refineries, and as it will be refunded upon all oil exported it can have little influence upon export. Its object is to increase the Russian revenue, the Government expecting by it to add about \$3,500,000 to its annual income. It is too soon after the inauguration of this measure to intelligently predict its effect upon the trade, but it is apparent to all that it will necessitate a great increase in capital to carry on refining, and thus materially assist the Rothschilds, who are the capitalists of the Russian petroleum trade, in obtaining a monopoly of the export business, to which end, by means of five-year ironbound contracts with refiners for all railway transportation obtainable by them (refiners), they (Rothschilds) are rapidly and successfully working.

I append statistics of the exports and home trades for the years 1886 and 1887, which I believe to be the latest available.

Shipments of Petroleum products from Batoum in 1886 and 1887, (in gallons.)

To—		Illuminating Oil and Distillate.	Crude, Residuum Lubricating Oil and Distillate.	Total.	Decrease.	Increase.
Austria-Hungary	{ 1886.....	.....	.....	13,290,970	.....	.....
	{ 1887.....	21,206,590	175,500	21,372,090	.....	8,081,120
Belgium	{ 1886.....	2,037,750	1,377,800	3,415,550	.....	.....
	{ 1887.....	4,042,500	2,351,400	6,393,900	.....	2,978,350
Bulgaria.....	{ 1886.....	49,000	.....	49,000	.....	.....
	{ 1887.....	265,300	.....	265,300	.....	216,300
Burmah	{ 1886.....	.....	.....	.....	.....	.....
	{ 1887.....	738,000	.....	738,000	.....	738,000
China	{ 1886.....	.....	.....	500	.....	.....
	{ 1887.....	620,620	.....	620,620	.....	620,620
Egypt.....	{ 1886.....	1,678,460	500	1,978,960	.....	.....
	{ 1887.....	4,322,570	.....	4,322,570	.....	2,643,610
England.....	{ 1886.....	1,907,500	1,980,185	3,887,685	.....	.....
	{ 1887.....	6,012,170	661,650	6,673,820	.....	2,786,135
France	{ 1886.....	1,708,400	1,649,135	3,357,535	.....	.....
	{ 1887.....	246,000	2,394,100	2,640,100	717,435	.....
Germany	{ 1886.....	1,490,000	1,300,850	2,790,850	.....	.....
	{ 1887.....	2,003,535	1,721,700	3,725,235	.....	934,685
Greece	{ 1886.....	418,500	1,750	420,250	.....	.....
	{ 1887.....	.....	.....	.....	420,250	.....
Holland.....	{ 1886.....	.....	120,000	1,250,100	.....	.....
	{ 1887.....	315,000	326,500	641,500	.....	521,500
India.....	{ 1886.....	1,250,000	100	1,250,100	.....	.....
	{ 1887.....	7,743,350	5,000	7,748,350	.....	6,498,250
Italy	{ 1886.....	2,181,000	1,078,200	3,259,200	.....	.....
	{ 1887.....	2,009,600	342,850	2,352,450	906,750	.....
Malta	{ 1886.....	.....	.....	.....	.....	.....
	{ 1887.....	120,000	.....	120,000	.....	120,000
Roumania.....	{ 1886.....	4,604,410	81,150	4,685,560	.....	.....
	{ 1887.....	869,250	54,200	923,450	3,762,110	.....
Spain.....	{ 1886.....	308,000	.....	308,000	.....	.....
	{ 1887.....	.....	285,000	285,000	23,000	.....
Turkey	{ 1886.....	10,476,290	7,905	10,484,195	.....	.....
	{ 1887.....	9,061,000	76,550	9,137,550	1,346,645	.....
Tunis and Algiers.....	{ 1886.....	372,000	.....	372,000	.....	.....
	{ 1887.....	.....	.....	.....	372,000	.....
Denmark.....	{ 1886.....	300,750	.....	300,750	.....	.....
	{ 1887.....	.....	.....	.....	300,750	.....
Other countries	{ 1886.....	3,469,065	1,096,950	4,566,015	.....	.....
	{ 1887.....	.....	.....	.....	4,566,015	.....
Total Export.....	{ 1886.....	.....	.....	54,236,320	.....	.....
	{ 1887.....	.....	.....	67,969,935	12,414,955	26,148,570
Russia.....	{ 1886.....	.....	.....	13,523,330	.....	.....
	{ 1887.....	9,661,200	102,850	9,764,050	3,759,280	.....
Total Shipments.....	{ 1886.....	.....	.....	67,759,650	.....	.....
	{ 1887.....	.....	.....	77,733,985	16,174,235	26,148,570

Shipments of Petroleum products from Baku via Caspian Sea, in 1886 and 1887, (in gallons.)

Products.	To Russia—	Increase.	Decrease.	To Persia—	Increase.	Decrease.	Totals.
Illuminating ... { 1886...	88,744,725	.....	.....	955,024	.....	.....	89,699,749
{ 1887...	112,196,875	23,452,150	.....	938,450	.....	16,574	113,135,325
Residuum { 1886...	161,973,930	.....	.....	319,720	.....	.....	162,293,650
{ 1887...	197,821,515	15,847,585	.....	208,290	.....	114,430	178,029,805
Crude { 1886...	12,369,380	.....	.....	30,185	.....	.....	12,399,565
{ 1887...	14,848,070	2,487,990	.....	635,250	605,065	.....	15,483,320
Lubricating..... { 1886...	1,755,575	.....	.....	.....	.....	.....	1,475,575
{ 1887...	4,553,125	3,077,550	.....	125	125	.....	4,553,250
Other products { 1886...	1,114,285	.....	.....	188	.....	.....	1,114,473
{ 1887...	873,130	.....	241,150	7,815	7,627	.....	880,945
Totals..... { 1886...	265,677,895	.....	.....	1,305,117	.....	.....	266,983,012
{ 1887...	310,292,715	44,615,820	.....	1,789,930	484,813	.....	312,082,645

PROSPECTS.

The prospects of the Batoum petroleum exporters for 1888 were never brighter, with greatly increased railway transportation, declining prices at Baku, a steady downward tendency in the value of Russian paper money, and high and advancing prices in the markets of the world. If they do not reap a rich harvest this year, they will have lost a golden opportunity, such as is rarely seen in any business. It is expected here that the Batoum exports this year will be over 150,000,000 gallons, almost double those of 1887, but I do not believe it is possible for them to exceed 120,000,000 gallons. A very good beginning has been made, however, as the January shipments were over 10,000,000 gallons, and the steamer charters for cases January, February and March, loading for India alone, are nearly 6,000,000 gallons.—BATOUM, *February 1, 1888.*

JAMES C. CHAMBERS,
Consular Agent.

AMERICAN AND RUSSIAN PETROLEUM IN MARSEILLES.

The imports of crude and refined petroleum into this consular district during the past two years have been as follows:

	PORT OF MARSEILLES.		PORT OF CETTE.	
	1886.	1887.	1886.	1887.
American :				
Crude.....	<i>Barrels.</i> 101,011	<i>Barrels.</i> 56,959	<i>Barrels.</i> 103,614	<i>Barrels.</i> 121,193
Refined.....	565	6,090	6,647	7,428
Russian :				

While, therefore, the imports of American crude oil at Marseilles show a falling off of nearly half, as compared with those of 1886, the importation of Russian crude at this port has ceased altogether. While the importations of refined Russian kerosene at this port declined 14 per cent. those of American kerosene increased from 565 barrels in 1886 to 6,090 in 1887. At Cette, where the imports of crude naphtha are more than double those of Marseilles, Russian petroleum, both crude and refined, are unknown, the entire receipts being of American origin.

Considering the general dullness of the petroleum trade everywhere during the past year, the foregoing exhibit for the district of Marseilles is thought to be exceedingly favorable. Instead of losing, American petroleum, both crude and refined, is regaining in this city the ground which had been lost during recent years in the competition with Russia. It is, in fact, no longer possible to import and refine Russian naphtha in France, in competition with the vastly richer and superior crude material from the United States, and this situation will continue as long as the present import duties on crude oils are maintained in this country.

The "Standard Russe," the powerful corporation which was organized here several years ago to purchase and work the oil-producing districts of Ilskie, in the Kouban Caucasus, has closed up and sold out the wreck of its affairs, and the refiners in this district look entirely to our country for their supplies of crude.

Arrangements are now in progress for a largely increased importation during 1888, the only point still in controversy being that of freights. There are generally no return cargoes here for petroleum ships from America. A few go to Spain for ores, to the Greek islands for "cliff stone," or take return cargoes of salt from Cette or Hyeres; but as a rule they are obliged to return home in ballast.

It remains to speak of

LUBRICATING OILS,

in which material Russian competition has become most formidable and threatening to American interests. There were imported at Marseilles during the past year 14,692,887 pounds of lubricating oils, of which 10,524,472 pounds, or nearly three-fourths, came from Russia, 3,519,168 from the United States, and the remainder from England, Germany, and Italy; although all, or nearly all, of the small proportion received from the three last named countries came originally from either Russia or the United States.

The reasons which give Russian lubricating oils precedence in French markets are sufficiently obvious. While American naphtha is far richer than the Russian in kerosene, the Russian crude oil contains more of the viscous properties essential to a good lubricator. Russian machine oils are therefore

In all the lower grades the same difference of value obtains; and not only this, but the cheaper American lubricating oils are said to contain a trace of paraffine, which, when applied to machinery heated above about 95° F. forms a glaze or coating that interferes with perfect lubrication.

On the other hand, American oils have the advantage of being well manufactured, and of being uniform and reliable in quality. Grades and brands are definitely established, and however large the quantity ordered of a trustworthy American dealer, every barrel will be found to be exactly what it pretends to be. This is not true of Russian lubricating oils. They are prepared by a great many different makers, more or less ignorant and inexperienced, and though called by the same name, and nominally of the same grade, the quality is often variable and uncertain.

Whatever superiority Russian lubricating oils possess over American oils of equal cost, is due entirely to the superior viscosity of the crude material from which they are made, and for which no skill in manufacture can compensate without unduly increasing the price.—MARSEILLES, *January 31, 1888.*

FRANK H. MASON.

RUSSIAN PETROLEUM IN THE EAST.

Taking into consideration the fact that the United States have hitherto had the monopoly of the sale of kerosene oil in China, it may be of interest to learn that the oil merchants of Baku, have resolved to start a company for the supply of naptha and kerosene to the ports of Japan, China and Siberia. Shops for the sale of lamps are to be established at Bladivostock and Petropanlovsk. From these lamps will be sent to the retail shops in the countries named. The steam ship "Castle Eden," lately arrived at Calcutta with a cargo of 73,000 cases of kerosene oil from Batoum. This is the first importation into Calcutta of the product of the great Caspian oil field, but imports have been made into Bombay for some years. I understand that large importations are made from Baku into England.—PEKING, *January 12, 1888.*

CHARLES DENBY.

RECENT TARIFF ON BREADSTUFFS IN SWEDEN.

During the past three years there have been continuous and determined efforts made by the advocates of protection in this country, to impose a duty on breadstuffs brought into this kingdom. A year ago, at the last session of the Diet, a measure of that kind ~~did~~ *did* ~~successfully~~ *successfully* ~~pass~~ *pass* ~~into law~~ *into law*.

TARIFF CHANGES IN NORWAY.

the protectionists were defeated, which summarily settled the matter for that year. When the Diet assembled this year, however, it happened that, through means of a technicality in the election, twenty-two protectionist members from the neighborhood of Stockholm were seated, thus again giving the protectionists a majority in both chambers. The Breadstuff Tariff Bill was brought up, and, with all haste possible, to prevent an anticipated large importation of breadstuffs, pushed through both chambers by the following vote: Yeas—First chamber, 73; second chamber, 114; Nays—First chamber, 59; second chamber, 104; majority, 24. The King has approved the bill, and proclaims that it shall go into effect on February 14, 1888.

The new tariff is as follows:

		Per 100 kilos or 220 $\frac{1}{2}$ pounds.		
	Kroner	2 50 öre	or	\$0 67
Unground.				
Wheat and rye.....	"	2 50	"	67
Maize and barley.....	"	2 50	"	67
Peas and beans	"	1 00	"	26.8
Oats	"	3 00	"	80.4
Malt.....	"	2 50	"	67
All not specified.....				
Ground, etc.	"	30	"	08
Bran.....	"	4 30	"	1 15.2
Vegetable meals.....	"	4 50	"	1 20.6
Groats and meals.....				

[1 krona = .26.8 cents; 100 öre = 1 krona.]

During the week there have been large importations of flour, rye and rye meal from Russian, German and Danish ports in order to escape the new tariff; and it is thought that many vessels loaded with breadstuff will be prevented from arriving before the law goes into effect by the serious ice obstructions, caused by the unusually severe winter. —GOTHENBURG, *February 14, 1888.*

ERNEST A. MAN,
Consul.

TARIFF CHANGES IN NORWAY.

The Norwegian Storthing yesterday unanimously voted to raise the duty on crushed maize, or Indian corn, which up to this time has paid a duty of 50 öre per 100 kilogram, to 15 öre per kilogram.

The reason of the Government's proposition to the Storthing, the design of which was to raise the duty only to 10 öre per kilogram, is that the brewers of this country have lately commenced to employ a method, which has long been in use in England, viz., to use unmalted maize as a substitute for malt, on which a duty of 23.5 öre per kilogram is now levied. It has

The new duty on maize, which will go into effect to-morrow, February 10, must be said to be a prohibitive one, and will prevent the importation of the article from the United States for the said purpose.

The Storthing in its meeting of yesterday resolved to raise the duty on tobacco, which resolution was sanctioned by the King and went into effect at once.

	New rates per kilogram.	Old rates per kilogram.
Tobacco stems.....	kroner, 1.75.	kroner, 1.25
Leaf tobacco.....	kroner, 1.75.	kroner, 1.25
Snuff.....	kroner, 2.10.	kroner, 1.50
Cigars and cigarettes.....	kroner, 3.60.	kroner, 2.75
Tobacco for smoking, chewing, and other manufac- tured tobacco	kroner, 2.10.	kroner, 1.50

I will add that the yearly importation of tobacco into Norway is calculated at—

	Kilograms.
Of leaf tobacco.....	1,671,000
Of cigars and cigarettes.....	61,900
Of snuff and other manufactured tobacco	13,700

CHRISTIANIA, *Feb. 9-23, 1888.*

GERH. GADE,
Consul.

TOBACCO IN EGYPT.

At its session, on the 25th of this month, the Egyptian Legislative Council approved the proposition of the Khedivial Ministry to impose a tax of £ E. 30 (thirty Egyptian pounds) on every feddan ($1\frac{1}{20}$ acres) of land cultivated in Egypt in tobacco.

The proposition covers fractional parts of a feddan, and hence is directed against production for family uses as well as for market consumption. The proposition will speedily become a decree.

Of course a tax equivalent to \$157.50 per acre on bare production is prohibitory, and hereafter even the poor fellaheen of Egypt must buy tobacco, which is universally consumed, from some other country. About thirteen thousand feddans is the annual growth of tobacco in Egypt, and hence, at a production of five hundred pounds per feddan, it will take six million five hundred thousand pounds of imported tobacco to make up the coming deficiency on home production.

The import tax upon tobacco will be about twenty-four cents per pound. The cheapest tobacco in the east, which may be drawn upon to supply the enforced Egyptian demand, is found in Syria, but this will be undersold by a Grecian product, which may be bought at about twenty cents per pound.

TREATY PORTS IN CHINA.

I have examined the market reports of the United States, and it appears to me entirely possible for our tobacco growers to meet the Egyptian demand with profit to themselves. The only obstacle would seem to be, that American tobacco may be too strong for the Egyptian taste. But the consumption of tobacco in Egypt is alone through smoking, and knowing the ingenious methods by which our people so aptly meet the requirements of almost any taste, I cannot doubt their ability to satisfy Egyptian palates in this respect. It is very certainly worth the trial, and I earnestly hope steps may be taken, which may lead to opening up a trade, most beneficial to one of our most important industries.

I shall be pleased to answer inquiries concerning the matter presented.—
CAIRO, EGYPT, *December 27, 1887.*

JOHN CARDWELL,
Consul General.

RAILROADS IN AUSTRALIA.

I have the honor to inform you that this is considered an important day in the Colonial history of Australia, being the opening day of a continuous coast line of railway from Adelaide, in South Australia, via Melbourne, in Victoria and Sydney and Newcastle, in New South Wales, to Brisbane, in Queensland, a distance of nearly one thousand eight hundred miles. Enclosed I send an article from the *Sydney Daily Telegraph* descriptive of the completion of the connecting links between Sydney and Newcastle, and between the latter city and Brisbane.* Newcastle is thus brought into daily communication, both by land and water with Sydney, the metropolis of this colony. The distance by sea is about 75 miles, and overland about 99 miles.—NEWCASTLE, NEW SOUTH WALES, *January 16, 1888.*

THOMAS M. DAWSON,
Commercial Agent.

TREATY PORTS IN CHINA.

The localities in China at which foreigners have the right to reside, to procure property, and to do business are the following: Shanghai, New-Chwang, Tien-Tsin, Chefoo, Ichang, Hankow, Kiukiang, Wuhu, Chin-Kiang, Ningpò, Wênchow, Foo-Chow, Tamsui, Takow, Amoy, Swatow, Canton, Kiungchow, Pakhoi.

To these, if any steps were taken to that end, Nanking might be added under the existing Treaties. Should the present efforts to navigate the upper Yangtzy by steam prove successful Chunking will probably be opened to the world.

The information given in this condensed form is sought from me in many letters from my
— *Comptroller of the Department in answering*

THE TELEGRAPH IN FORMOSA.

I have the honor to inform the Department that this port now has telegraphic communication with the Island of Formosa. A submarine cable has been laid across the Formosa Channel from Keelung in Formosa, to Foochow on the mainland. A similar cable connects Formosa with the Pescadores Islands, while a land line of telegraph to connect Taiwanfoo in South Formosa with the north end of the Island, is now under construction. This brings Formosa into telegraphic communication not only with the Chinese Empire, but with Europe and America.

The Provincial Government of Formosa has accomplished this more for its military importance than its commercial necessity, at the same time it will be one of very considerable advantage to trade. — AMOY, *January 3, 1888.*

W. S. CROWELL,
Consul.

SUGAR EXPOSITION IN BRAZIL.

IMPERIAL LEGATION OF BRAZIL, WASHINGTON, *March 22, 1888.*

MR. SECRETARY:

I have the honor to inform Your Excellency that His Excellency the Minister of Agriculture, Commerce, and Public Works has addressed a communication to this legation, requesting it to lend its aid to an exhibition of sugars, which is to be held at the capital of the empire in the month of August next. This exhibition has been organized by an association of planters, manufacturers, and dealers in sugar, known as the *Centro de Industria e Commercio de Assucar* (*i. e.*, "Center of Sugar Industry and Trade"), which hopes to meet with coöperation in foreign countries among persons interested in the cultivation of the sugar-cane and its cognate industries.

The main object of this exhibition will be the comparative examination of the various kinds of sugar now in existence, and of the processes and machinery used in their manufacture; also the collection of statistical information concerning the manufacture and trade in sugar, and concerning the fiscal systems in force with regard to it in the various countries.

Thinking that this intelligence may be of interest in this country, I have the honor to bring it to the knowledge of Your Excellency, to whom I repeat the assurances of my highest consideration.

ITAJUBÁ.

His Excellency THOMAS F. BAYARD, *Secretary of State.*

TARIFF CHANGES IN INDIA.

By an act of the Supreme Legislative Council of British India, published on the 19th instant, the tariff act of India was so amended as to impose an additional import duty of 8 annas (23 cents) per maund (82 $\frac{2}{7}$ pounds) on salt imported into India, with certain exceptions, which are noted in the enclosed copy of the Official Gazette of India, of date of January 19, 1888.

And as a further matter of public interest I have to advise the Department that on the 27th instant a bill was introduced in said Legislative Council by Hon. Mr. Westland to authorize the Government of India to levy a customs duty of 5 per cent. on petroleum.

I think it probable that the bill will become

levying of a tariff on that article (which has hitherto been on the free list) as a matter of special concern to American exporters of kerosene.

For your further information on this subject I enclose an additional extract from the *Englishman* newspaper, published here, of the 28th instant.

In this connection I wish to take the liberty of adding that our British cousins in India seem to be very much interested in our plethoric exchequer, and the further question as to how it was brought about. It has occurred to me that our colonial cousins may have concluded that if too much tariff indulgence in that line of policy they might be relieved of a serious deficit which just now seems to be troubling them. — CALCUTTA, January 31, 1888.

DEPARTMENT OF FINANCE AND COMMERCE—NOTIFICATION—ACCOUNTS AND FINANCE—
SALT—CALCUTTA, THE 19TH JANUARY, 1888.

In exercise of the powers conferred by section 7 of the Indian Salt Act, 1882, and in supersession of notifications by the Government of India in the Department of Finance and Commerce, Nos. 1449, dated 10th March, 1882, and 751, dated 28th April, 1882, the Governor-General in Council directs that on and after the date of this notification the duty to be paid on salt manufactured in or imported by land into British India shall be as follows:

(a) In the case of salt manufactured in or imported by land into Lower Burma, one rupee for each maund of $82\frac{2}{7}$ pounds avoirdupois weight; and

(b) In the case of salt manufactured in or imported by land into any other part in British India, except that portion of the territories administered by the Lieutenant-Governor of Punjab, which lies west of the river Indus, two rupees eight annas for each maund of $82\frac{2}{7}$ pounds avoirdupois weight.

NEWSPAPER EXTRACT.]

At the meeting of the Supreme Legislative Council yesterday, the Hon. Mr. Westland introduced the bill authorizing Government to levy a customs duty of 5 per cent on petroleum, and in doing so he made an important statement regarding the financial position of Government and the conditions which rendered it necessary to add to the existing sources of revenue. In reality, the proceedings took the form of a debate upon the substance of the forthcoming budget, and it is a pity that, in so far as the increase of the salt tax is concerned, this debate has an *ex post facto* character. It is not disputed for a moment that Government was acting strictly within its legal rights in announcing the increase of the salt duty by means of a "Gazette Extraordinary;" the only question is whether this course was expedient. No doubt it would have been a departure from established precedent had Government produced the measure in council as a legislative project, but in view of the very general advocacy of some such procedure that has made itself heard of late throughout India, it might have been politic, it certainly would have been popular, had precedent been set aside, and had Government merely gone through the form of submitting the proposal in council for the purpose of discussion. We regret that we cannot regard as unanswerable the objections urged yesterday by his excellency the Viceroy to the adoption of such a course. "To have given a kind of notice, which some people seem to have desired, would have been merely to have benefitted a certain number of individuals at the expense of the community at large." This statement cannot be held to meet the case, unless we are to suppose that there is something altogether

peculiar conditions which it may be possible and safe to propound prospective schemes of taxation in England, and which render such a course in India impossible. So far, at least, as regards the manner in which the proposed taxation would have been received had it first been submitted in council, we can judge from the speeches delivered at yesterday's meeting. Raja Peary Mohan Mukerji may be regarded as a fit spokesman for the native community, and his testimony was given with no uncertain voice. "The additional duty upon salt, which his excellency the Viceroy had lately imposed by an executive order, had given the Government of India about £1,500,000, and it was at the same time a measure which had given very general satisfaction, as one which would not touch to an appreciable extent even the poorest in the land." This statement was received by Lord Dufferin with extreme satisfaction, and it may be accepted as a complete answer to the sentimental maundering of a certain portion of the London press.

The address in which the Finance Minister laid bare the pressing necessities of the Government can hardly be regarded as satisfactory, although it really adds little to our previous knowledge of the situation. The heavy losses by exchange which the Government has had to face in the past few years, added to the large outlay on defences and on the Burma campaign, have swamped the revenues, which have been further impoverished by a fall in the price of opium and a diminution in railway receipts. The last budget in which the position could rightly be described as satisfactory was that of 1883-'84, and ever since we have been going gradually backward in a financial sense. The Finance Minister rapidly traces the history of the past ten years ending with 1884-'85, the year which Sir Auckland Colvin described as the last of the fat kine. He then gives an abstract of the accounts of 1884-'85, and of the estimates of 1887-'88, for the purpose of comparison. "The abstract will be very easily traced back into its component figures in the published accounts. Its main peculiarity is, that besides showing the expenditure heads *net* instead of gross, I have separated the exchange figures, so that I may show, first, how the comparison would have stood had there been no alteration in the exchange, and I have then shown in a separate figure the extra charge falling upon us on this account. It will be seen that the totals up to which the statement works show that, whereas in 1884-'85 we had fifty-one millions of revenue, of which forty-eight millions went in expenditure and three millions in exchange, we find ourselves in 1887-'88 with three millions more of revenue, namely, fifty-four millions in all; but as exchange now costs us five millions instead of three millions, the three millions better revenue afford us only one million for real increase of expenditure." It is then shown how civil as well as army expenditure has increased, and how the various burdens of the Government have brought it to the sad necessity of extending the scheme of taxation. All this is the prelude to the petroleum bill, which is introduced at last somewhat brusquely. As we have already said, however, the tax seems to us a just and intelligent one, and we have no doubt that it will be regarded in this light throughout the empire.

The bill referred to, after amendment providing for a *specific* duty of 6 pie, or $\frac{1}{2}$ anna, per gallon, instead of the *ad valorem* duty above referred to, was enacted into a law on the 10th instant. It will be observed, however, from the enclosed copy of said act, that what is commonly known as lubricating oil, if it will pass the fire test therein specified, is admitted free of duty.

Although it is considered that the specific duty of 6 pie, or $\frac{1}{2}$ anna, per imperial gallon is a somewhat higher tariff than that of 5 per cent *ad valorem*, as originally proposed in the bill, yet it is generally thought by those interested with whom I have had an opportunity of conferring that this new duty on petroleum will not have the effect to materially diminish its *immediate*

factured gas, or even the vegetable oils—such as cocoa-nut, castor, and mustard oils—which were extensively used in India for purposes of illumination prior to the importation of kerosene for that purpose.—CALCUTTA, February 20, 1888.

ACT NO. 2 OF 1888.

An Act to provide for the levy of a customs duty on petroleum.—Whereas it is expedient to provide for the levy of a customs duty on petroleum. It is hereby enacted as follows:

1. To the second schedule to the Indian Tariff Act, 1882, the following shall be added:

Petroleum, including also the liquids commonly known by the names of rock oil, Rangoon oil, Burma oil, kerosene, paraffine oil, mineral oil, petroline, gasoline, benzol, benzoline, benzine, and any inflammable liquid which is made from petroleum, coal, schist, shale, peat, or any other bituminous substance, or from any products of petroleum, 6 pies per imperial gallon.

Exception.—Petroleum which has its flashing point at or above 200 degrees of Fahrenheit's thermometer, and is proved to the satisfaction of the customs collector to be intended to be used exclusively for the batching of jute or other fiber, or for lubricating purposes.

And whereas the provisos to section 37 of the Sea Customs Act, 1878, do not apply to goods to which a rate of duty is not already applicable; it is further enacted as follows:

2. The rate of duty applicable to petroleum, of which the bill of entry is delivered, within the meaning of section 37 of the Sea Customs Act, 1878, to the customs collector, under section 86 of that act, after the passing of this act, shall be the rate of duty specified in the second schedule to the Indian Tariff Act, 1882, as amended by this act.

KEROSENE IN INDIA.

For the Indian fiscal year ended March 31, 1886, the total imports of kerosene oil (for illuminating purposes), were 17,461,875 gallons, valued at rupees 6,936,612 = to \$2,469,433.87, valuing the rupee at \$0.35.6 as fixed by the Director of the U. S. Mint for 1886. "Other sorts"—probably lubricating principally, is set down for the same year at 2,767,475 gallons, valued at rupees 1,076,495 = to \$383,200.18.

For the fiscal Indian year ended March 31, 1887, the total importation of illuminating oil (kerosene) from the United States, increased from 17,461,875 (in 1886) to 29,144,765 gallons, valued at rupees 11,361,510 = to \$3,942,443.97 counting the rupee at \$0.34.7 which was its value as fixed by the Director of the U. S. Mint for 1887. For this year (1887) the kerosene, or mineral oil classified as "other sorts," fell off to the trifling amount of 177 gallons, caused probably by the over stocking of the market with that species of oil.

The increase during the fiscal year last past of 11,682.890 gallons, or over 66 per cent., is quite encouraging if it can be maintained. In view of the fact that the value of the imports of kerosene during the year ended March 31, 1887, is 97.2 per cent. of the total value of all imports from the United States to India, it becomes very important that this trade should be

The only way in my judgment that our exporters of kerosene can maintain the supremacy which they have acquired in the oil trade in the East is by shipping none but good oil in good condition. In this connection I deem it proper to state, that in the month of June last, two cargoes of oil arrived at this port from New York per British ships "Corby" and "Othello" which were reported to be in a bad and unmerchantable condition. While it did not devolve upon me in my official capacity to institute a survey or other official inquiry into the condition of these cargoes, I did take occasion to visit the oil warehouses or sheds while the cargo of the "Corby" was being discharged and found the oil to be in a very deplorable condition so far as the leakage of the tins was concerned.

However, Messrs. Albert Sieger and Wm. Adye of this city were designated by the parties interested here in the oil cargoes of the respective ships referred to, to make a survey with a view to ascertain the extent and causes of the damaged condition of said oil, etc. These gentlemen, at my request, kindly furnished me for my information with copies of their reports, which I enclose.

As to the cause or causes of the bad condition of these cargoes, I do not feel competent or called upon to speak; but I am satisfied that the *condition* of the "Corby's" cargo is not exaggerated in the report of the surveyors.

In conclusion I wish to submit a few observations on the subject of Russian competition (which has recently been assuming a more formidable aspect than heretofore) for the oil trade of India. On this subject I copy from the Government report of the trade of India for 1886-'87, the following:

From Asiatic Russia, that is to say from Batoum, were received last year some consignments of kerosene oil. These were the first and trial consignments of the Baku oil to India. Quantity, 1,577,392 gallons; value, 670,428 rs. This is trifling compared to the enormous quantities annually received from the United States, and is said that in Karachi at any rate the importations met with no special favor. But it is the beginning of what may prove a formidable competition with American oil, and perhaps the creation of an extensive trade with Russia. The only other competitor in the supply of mineral oil to India which Russia has is India herself, and here the conditions are such that it will be difficult for India oil (if it should be found in large quantities) to compete with foreign oil struck near the seaboard of the United States and Russia.

Since the compilation of the report from which the above extract is taken, Russian competition has become much more active than heretofore, and for the past seven or eight months largely increased quantities of Russian oil have been shipped to different ports in India from Batoum. I have made careful and thorough inquiry as to the quality of this Russian oil as compared with that shipped from the United States, and with the exception of the unfortunate cargoes of the "Corby" and "Othello," hereinbefore referred to, I find that the Russian oil is of a materially inferior quality. It gives out more or less smoke and requires better ventillation to burn it properly than is afforded by the ordinary burners in use here. *Vet. on account of*

KEROSENE IN INDIA.

the inferior vegetable oils formerly in vogue, cheapness of price with many of them is a greater inducement to purchase than superiority of quality. And in this way and for these reasons Russian oil is gaining a foot-hold in India. I am also advised that unscrupulous dealers are in some instances transferring inferior Russian oil into empty American tins, which are very abundant in this country, and selling the contents as American oil.

I have recently received a letter from our consular agent at Rangoon, bearing date the 3d instant, calling my attention to the fact that a firm of oil merchants in Rangoon are putting inferior Russian oil in "Devoe & Co.'s" tins and selling the same as the American oil of that brand. Notwithstanding the increasing competition from Russia and the fraudulent practices of retail venders, above alluded to, if proper and available steps are taken to suppress the fraud it is my judgment that we can for many years to come keep the lead in the petroleum trade of this country. — CALCUTTA,
 B. F. BONHAM,
Consul-General.
 February 28, 1888.

[EXHIBIT A.]

KEROSENE OIL PER "CORBY."

CALCUTTA, 18th July, 1887.

We the undersigned have been called upon by Messrs. Graham & Co. to act as arbitrators between themselves and Messrs. Johurmull Gujanund regarding a cargo of kerosene oil, bearing Messrs. Lombard, Ayres & Co.'s "Stella" brand, which arrived here per "Corby" from New York on about the 9th June, 1887, Messrs. Graham & Co. being the sellers and Messrs. Johurmull Gujanund the buyers, under a contract dated 15th January, 1887; and after most careful and fullest surveys on the 4th, 12th, and 14th instants, both on shore and in ship's hold, we have unanimously come to the following decisions:

- 1st. The [oil] cargo is not a fair nor legal tender under above contract.
- 2nd. The [oil] cargo is decidedly unmerchantable as a whole.
- 3rd. The [oil] cargo cannot have been shipped in good order and condition.
- 4th. The very excessive leakage, bad rust, and discoloration of oil is caused by the presence of certain foreign matters hereafter referred to.
- 5th. The buyers have the option of entirely rejecting the [oil] cargo.

We have come to the above conclusions from the following facts:

There is no question of sea-water damage, as is shown by marine surveyors' reports; neither is there, in our opinion, any question of the cases, tins, or oil having deteriorated or been tampered with in any way whatever, either during or after landing at the port commissioner's go-down at Budge Budge.

At our first survey on the 4th there were 6,000 cases odd already discharged, and we understand that during the landing of these the buyers detected some foreign matter running out of most of the leaky cases, which they reported to sellers.

In our second survey, on the 12th instant, not quite half the cargo was out — say about 24,000 cases.

We then, from what we saw from the large quantity of tins which we opened, and which were found to contain foreign matter in varying proportions, and also from the general outward condition of above portion of cargo, unanimously came to the conclusions stated in para-

On the 12th we advised, in view of the small accommodation for the wasting oil, to stop the ship's discharge until suitable plant could be got down to Budge Budge to hold same, with a view of refilling tins after repairs, etc., as in our opinion the waste of oil on that date if allowed to continue would have far exceeded what the daily demurrage would be.

The more the bulk was broken apparently the worse became the condition of the cargo.

The cases in the hold appeared to be perfectly clean and sound, but as soon as they were disturbed in the course of the ordinary handling of discharge the leakage commenced, and in some instances it is no exaggeration to say the leak resembled the head of a watering-can.

We would add, however, the cases and tins, on further minute examination, proved to be of poorer quality and strength than other brands. A number of "Stella" tins on being weighed against others of other brands proved to be from one to six ounces lighter.

The boxes also seem not as strong as usual, and we noticed particularly the head or end pieces in a great many instances were of two pieces instead of one, and had been joined together by a rivet, which tends to weaken them.

We herewith also attach the government analyst's report, which coincides with the views we had arrived at, *i. e.*, the rust and consequent excessive leakage from the tins becoming perforated is entirely due to the action of the foreign matter, which above reports prove to be a composition of acid and water. The rust on the outside is all on the top of the tins, around the labels, where the leakage is worst, as the acid has eaten large holes into the tins around and under the labels. All of the tins which were cut open showed rust inside on mostly all sides, chiefly at the bottom.

We consider it our duty, in view of above paragraphs, of the serious damage and leakage already existing, and also of the great amount of probable demurrage, to suggest that the cargo be landed, handled, and sold as speedily as possible to best advantage for all concerned.

[Arbitration fees, R. 300.]

ALB. SIEGER.

[Arbitration fees, R. 300.]

WILLIAM ADYE.

[EXHIBIT B.]

KEROSENE OIL PER "OTHELLO."

CALCUTTA, *July 21, 1887.*

At the request of Messrs. Gisborne & Co., we the undersigned attended at the Government sheds at Budge Budge, on the hereafter mentioned dates, to survey the cargo of kerosene oil, "Stella" brand, landed ex "Othello," which, we are informed, the buyer refuses to take delivery of under the terms of a contract dated 15th December, 1886.

We examined on the 6th instance 50 cases; on the 14th instance 275; on the 17th instance 675; total 1,000 cases, and found that out of this number, 367 cases contained in the tins an admixture of oil and foreign liquid matter, which on analysis by the chemical expert to Government, proved to be water and acid. From a number of tins the water came out quite clean, from others, as a thick red fluid, and the quantity of this admixture varied from one-half to five quarts. A considerable number of cases were landed leaking, caused by inside rust, or by rust round the tops and labels, and this damage can only be attributed to careless soldering, as the cases showed no traces of sea water damage. We found further that also tins which on examining showed no trace of water, contained, on being cut right open, a slight sediment on the sides and at the bottom, forming rust spots on the inside of the tins, which ultimately would have formed leaks in the same manner as the leaky portion of the cargo.

The admixture of water or foreign matter was first detected in the cases landed leaky, and as after a preliminary examination it was evident that they all contained more or less of an admixture, we purposely excluded them from the survey, choosing for it only such cases as were apparently quite sound. Of these cases looking outside clean and fresh, a number turned out leaking when opened, and the details

From this examination it is quite evident that it is impossible to separate the cases containing oil from those containing the foreign matter, unless the whole cargo be opened. We consider therefore the cargo to be unmerchantable, and not a legal tender under contract, and the buyer entitled to reject the same under clause No. 8 of above contract.

As, however, the buyer has declared his willingness to take delivery of the cargo with an allowance, and as the amount of such allowance has been left to our decision by both the sellers and buyer, we hereby award the buyer our allowance of 5 annas per case on the contract price.

ALB. SIEGER.
W. ADYE.

DEAR SIR:

CALCUTTA MEDICAL COLLEGE, 8th July, 1887.

With reference to the two samples of liquid removed from certain kerosene oil tins and left with me for examination yesterday afternoon, I have the pleasure to submit the following report:

The samples were contained in soda water bottles and bore no distinguishing labels. Both samples consisted of two layers, an upper one which had the properties of kerosene oil, and a lower one, turbid from oxide of iron. The lower layer of liquid after separation of suspended matter by filtration had the following properties.:

It was acid in reaction. It contained chlorine zinc and minute traces sulphuric acid, lime, iron. Taking the free acid as hydrochlorine acid, spirits of salt, the amount was in one sample 2.47, and the other 3.759 grammes per litre. The total dissolved solids were equal to 6.00 and 9.536 grammes per litre dried at 115° C. The total chlorine free and combined was equal to 2.34 and 3.956 grammes per litre. Assuming the whole of the combined chlorine to have been in combination with zinc, the amount of that salt present would be equal to 4.17 and 7.42 grammes respectively for the two samples.

In my opinion water has been used to wash the tins, in order to remove the soldering fluid which has been allowed to remain in them. The liquid in which the chlorine of zinc, etc., was held in solution, was water. Yours faithfully,

C. I. H. WARDEN, M. D.
Chemical Examiner to Government.

THE GRAIN INTERESTS OF GERMANY.

At a time, and that not very long ago, a very large and important grain trade was carried on between this city and the United States, red winter wheat No. 2, Chicago No. 2, Milwaukee No. 2 being imported in large quantities.

From time to time there were heavy demands for mixed maize.

Mannheim had long enjoyed the profit and reputation of being the grain centre of south, or at least southwest, Germany. On its corn exchange the merchants of Wurtemberg, the Palatinate, Baden, parts of Bavaria and Switzerland met and bargained over grain from Russia, the Orient, and the United States, the grain of America always enjoying a reputation for an excellence superior to that of any other.

Mannheim's geographical situation, at the confluence of two very important commercial streams, the Rhine and the Neckar, gave the city an importance and pre-eminence which its enterprising citizens were not slow

commodities on cabled steamboats far into Wurtemberg. With practically unlimited water and railroad facilities she was promised a flourishing future when the blow came which has paralyzed her most important member—the grain trade. Mannheim can buy in the world's markets and have her goods shipped to her warehouses by the cheapest freight way, by water. Steamers from Odessa or New York can unload into Mannheim barges at Rotterdam or Antwerp, whence the grain can be delivered at Mannheim's docks at a cost, including freight charges, transportation, and insurance of 15 to 18 cents per 100 kilograms, or 218 pounds. The southern provinces, although very fruitful and blessed with a good climate, do not produce sufficient quantities of grain to cover the home demand, and are compelled to import. The northern provinces, those of the Kingdom of Prussia, Pomerania, Mecklenburg, in fact all the country bordering on the Baltic Sea, produce now, and have for a long time produced, quantities largely in excess of home consumption. Owing to the absence of duties on grain imports and the high rates for transportation by rail, the grain of the northern provinces found its way into the countries of Scandinavia, to England, and sometimes Belgium and Holland.

AMERICAN WHEAT.

This, in the first instance, was due to a preference on the part of North German millers for American cereals. To break up what bore the appearance of an anomalous state of affairs, the exporting of native and importing of foreign grains, the Government introduced a system of corn-taxes, calculated to remove the anomaly. The first tax was 1 mark, or 23.8 cents per 220 pounds, this was increased to 3 (68 cents) and very recently to 5 marks (\$1.19) per 220 pounds. Now it is a notorious fact the English millers preferred North German grain, and just as notorious that the South German millers not only did not, but preferred the grain of the United States. There is said to be a softness about the German product and a hardness about the American, and upon these properties is based the preference in each case. Since the increase of the tax to 3 marks (68 cents) and then to 5 (\$1.19) per 220 pounds, the grain trade of South Germany with America and Russia has ceased to exist. American wheat costs about 15½ marks (\$3.70) per 100 kilograms (220 pounds), including cost, freight, and insurance to Rotterdam; add to this cost of Rhine freight, 15 to 17 cents plus a 5-mark (\$1.19) duty, and American grain appears upon the exchange schedules at 21½ marks (\$5.11) per 100 kilograms (220 pounds), the duty alone being about 30 per cent.

Since South Germany must import, she is compelled to take the North German grain, this she can find in her markets at 18 marks (\$4.28) per 100 kilograms (220 pounds). This gives the North German grain a 3¼-mark (80 cents) start, or 15 to 20 per cent. advantage. The difference is too great to be overcome by anything like local prejudice or preference.

difference is $3\frac{1}{2}$ (80 cents). So long as the duty remains at 5 marks (\$1.19) per 100 kiloliters, a resumption of business is not possible, except when crops fail in the Holstein-Pomeranian or throughout the German provinces. It may be mentioned that the grain from the North German provinces is shipped from ports on the Baltic to Rotterdam and Antwerp, thence up the Rhine in barges. Since the exclusion of foreign grains became a fact, the provinces of Middle Germany, notably Prussian Saxony, Hanover, and Brunswick, blessed as they are with a good climate, have begun grain raising for the South German market. Before the tax-time grain from these provinces were almost unknown, competition being rendered impossible by the expenses of rail shipment. Five marks (\$1.19) duty on the 100 kilograms (220 pounds) of foreign grain has removed the obstacle, hence the new impulse; besides, the grains produced in these provinces (Rivets) were not liked. Now the South German miller and consumer *must* take them whether he likes or not; for 10 marks (\$2.38) a hundred kilograms will come should 5 marks cease to be powerful enough to exclude foreign, and protect home producers.

THE QUESTION OF IDENTITY.

It is required at present that bills, called "bills of identity," accompany shipments of grain from the northern ports (of Germany) to secure their entrance free of duty at the southern ports of the Empire. A movement has been on foot for some time to secure certain allowances under these bills. The Conservative party was expected to bring in and favor a bill before the Reichstag (the national Parliament), giving North German shippers the right to export, as heretofore, their grain to Norway, Sweden, Denmark, England, etc., sell it in those countries, and then to bring back and enter at German ports free of duty as much foreign, American, Russian, or eastern grain as they exported native. Such a bill is at present before the Reichstag. Each party is interested, though it is to be considered the special bill of the Conservatives. It is intended to give bills of allowance, good for six months from date, under which the foreign grains may be entered free of duty. Even at the risk of finding the shrewd traders of North Germany in the halls of South German exchanges, the dealers here are in favor of such an arrangement, satisfied that the northern dealer cannot operate successfully, for a long time, in two places so widely separated. There are those who are in favor of giving North German merchants not only the privilege of bringing in, duty free, as much foreign grain as he took out native, but also a bill or statement which he may sell, transfer, or give away, allowing the party to whom it is sold, transferred, or given to bring into German ports, free of duty, the amount set forth in the bill as having been exported. These bills now become "bills of allowance" instead

revenues paid to the Government as under the present system. The import will only be measured by the difference between the demand and the home supply. The only important question is one of results, how the thing will work. South German millers say it would work well in two or three ways: (1) in giving the people here their old business and a grain they like, the American; (2) in giving the English a favorite cereal and the North German dealer a trade he once found sure and profitable. Thus far the movement seems to have met but little encouragement from the Government, though business men say it must be settled very soon one way or another.

FLOUR.

Formerly large quantities of American flour found its way into the store-houses of South Germany. Ten and a half marks a hundred kilograms of American flour has changed all this. Another item of interest connected with the flour question is this: The South German miller is brought into sharper competition than he enjoys, with grain ground in the huge mills of North Germany. The necessity to profit the Prussian at the expense of the Bavarian and Badenser is neither an article of political faith nor commercial treaty. Comparisons are being drawn. The blessings of a tariff on bread, or to flow from the same, are neither self-evident nor fast in coming. Mannheim, a city abandoned when Bavaria's kings moved their court and capital to Munich, gained greater wealth and commercial renown by the exercise of talents and industry which were lost in the streets of a gay capital; pride, self-reliance, ever the associates of independent exertion, made her forget, for she no longer needed the royal favor. But all this grew up under free trade in grain. To-day the city is helpless under a blow more terrible than a court removal, nor has her protest been slow or half-hearted. Russian grain, bought January 1, 1888, in London, for 14.30 marks, cost 19.75 in Mannheim. Russian rye sold in England for 8.90 stood at 14.25 on Mannheim's lists. Feed-barley in the one place brought 8.85; here, 12 marks. Oats here, 8.40 to 9.90; in London, 13 to 14.25. In London mixed American wheat brought 11.80; here, 14.25. Life's staff costs 40 per cent. more in this city than in London; and rye, the principal food used here among the masses, is 50 per cent. dearer in Mannheim than in England's capital. Editors are submitting these statistics with the remark that leading articles could not speak plainer. Invention, so often the child of necessity, has followed close upon the legislative enactments by which the tax on grain has been increased. A village newspaper has urged upon the public the necessity of bestirring itself to counteract, as far as possible, the evils feared under the new schedules. A plan is also submitted. The original article has been printed and reprinted all over the Empire. The plan is to keep the surplus of home grain out of the hands of speculators. In this way price movements will be

these statements are to be published weekly in some advertising paper, viz: "The District Advertiser." Thus consumers, above all the millers, will be in a position to buy without the aid of speculating middlemen.

In large districts "unions" may be made, magazines or storehouses built, and the business conducted in the interest of all by regularly appointed and paid agents.

Formerly the producer was certain of the disposal of his surplus at an advantage in places where the grain trade was permanent and well developed. To regain his former position, and to retain it, will necessitate a return to freedom of trade in cereals. Supplementary to the new rates on grain and flour imports, in the extension and threatened increase of the city or community tolls, the so-called Octroi taxes. The farmer finds himself compelled to pay duties on his products before he can enter the cities to sell them. It is not altogether certain that protection to the farmers is to continue as an unmixed evil. Attention is already being called to the dangers threatening from the Octroi or local taxes. German economists, at least here in Baden, Bavaria, and the Pfalz, are wondering how they are to keep on competing with England, Holland, Belgium when the cost of living here is 40 per cent. dearer, because of taxed breadstuffs, than in London, Amsterdam, or Brussels. Between the upper and nether millstones of imperial and local legislation the German workman finds himself. The flourishing trade once done between the Baltic ports and foreign States is gone, the once flourishing trade of South Germany with Russia and America is gone ten years, five will find ships and steamers from the Black Sea, from the whole United States sea front, along the English, Dutch, and Scandinavian coasts delivering grain where the Germans once carried on a profitable trade. When less is consumed, as is certain to be the case, "Germany's grain supply will so increase as to require a disastrous drop in prices, disastrous to those whom the tax aims to protect; but this only after we have lost two profitable sources of trade," those so often referred to, in North and South Germany. Prices will in the end be affected more by supply than artificial legislation. Large supply, small prices; small supply, large prices; moderate supply, moderate prices. To-day the large land owner is in a great measure benefited, knowing in his soul that things must change, he will sell out his grain-fields at increased values, still conscious that he will be able to buy them back bye-and-bye, should he desire to do so, at a fearful discount.

After all, in the long run Germany would have done better, say business men, had she gone on with all her other plans of progressive politics, colonization, etc., and let the tax on breadstuffs alone. No commercial treaty, however favorable, can make up for the losses expected to result from the fact that it will not benefit a whole class, but a very small

demand. It was successfully demonstrated in Parliament by a well-known and distinguished agricultural member that the large farmers needed no assistance, and that small farmers would be injured by the system proposed. To the statement that lands given over to wheat culture were not paying because of constant depression of prices and increase in the cost of production, the member referred to submitted figures showing that in one case a farm of 500 acres showed a total of 23,702 marks for its wheat, rye, barley, oats, and rape sales for 1881, and 24,091 marks for the year 1886, a balance in favor of the latter year of 389 marks. The fall in price was more than made up for by the increased product. Now the cost of production during the same time had decreased, as may be seen from the following figures, taken from the books of the farm of which we are speaking. The average yearly cost of production was, from 1871-1875, 10,428 marks; 1876-1880, 10,609; 1880-1885, 10,100. The explanation of this is to be found in the necessities produced by competition, one of the results of which was the introduction of a machine for hand labor. The books of a farm of some 10 acres showed a harvest of grain insufficient for the wants of the farmer and his family; he was compelled to buy one-third of his yearly amount. These figures were submitted to Parliament by a practical farmer.—MANNHEIM, *January 25, 1888.*

J. C. MONAGHAN,
Consul.

SELF-REPRODUCING FOOD FOR YOUNG FISH.

Every person who has been interested in the artificial propagation of fish, particularly trout and the several other species belonging to the genus *salmonoid*, knows what care and labor are necessary to carry the young fry through the period immediately following the absorption of the umbilical sac, and to bring them to such a stage of maturity that they can be safely turned loose in open ponds or streams to shift for themselves. The mere hatching of the eggs involves no difficulty, and, under fair conditions, is ordinarily so successful as to make the propagation of fish in almost any quantity an apparently easy matter. But with the commencement of artificial nutrition the serious part of the task begins, and it is usually a small percentage of the swarms which are hatched that reach the maturity of yearlings, at which period the dangers of infancy are past. During the intervening months it has been customary to feed the young alewives on curdled milk, coagulated blood, finely hashed meat and liver, grated yolk of eggs, macerated brains of animals, etc., the preparation of which, and the frequent feeding of the dainty little creatures, involve constant and more or less costly labor. Moreover, none of these forms of nutriment have been found entirely satisfactory, for the reason that they are all distinctly artificial and different from the living, organic food which nature provides for them.

early, when the temperature of the stream or pond is so much below that of the tanks in which they have been hatched that they perish by thousands from chill and inanition, without making an effort to find natural food in their new element. Accordingly, the problem has been to devise a natural, self-reproducing food, so easy and certain in preparation that it may be cheaply and abundantly provided, and thus facilitate the maintenance of the alewives during the first ten or twelve months of their existence, by the end of which time they should be so strong and active that a large majority may be relied upon to survive the struggle for life in larger waters.

This result seems to have been fully attained by a discovery made several years ago by Mr. F. Lugin, of Geneva, and practiced since 1884 in the piscicultural establishment at Gremaz, in the department of Ain, in Eastern France. As this process has been examined and approved by eminent experts sent specially for the purpose by piscicultural societies of England and other countries, it is thought that some account of it may be of interest to the large and rapidly-growing class of fish culturists in the United States.

Mr. Lugin was for many years a practical fisherman on the Lake of Geneva. He noted the steady diminution of the more important species of fish in the lake, and sought to ascertain the cause. He gradually reached the conclusion that the germ of the trouble lay in the growing scarcity of minute crustacea and the larvæ which are the natural food of the trout and other fish, especially during their first months of nutrition.

After elaborate experiments he hit upon a system by which *daphniæ*, *cyclops*, fresh water shrimps (*grammarus pulex*) etc., could be bred in countless myriads at a merely nominal cost. The hatching and rearing of a generation of these minute creatures is the work of from twelve to fifteen days, and as the process may be repeated—or rather repeats itself—again and again in the same water, the problem would seem to be solved.

Whoever has watched from a place of concealment the trout feeding in an American stream has admired the adroitness with which they work down stream, raising with their noses the up-stream edge of flat stones until the current, catching underneath, aids the clever little forager to turn over the stone and expose the minute larvæ and crustacea on which he so voraciously feeds. It is the purpose of the process now under consideration to raise by artificial means these same species of organisms, and in such quantities that the young fry may not only be abundantly fed in tanks or small enclosed ponds, but ample supplies provided for enriching larger streams and ponds where, for some reason, the natural supply may be insufficient.

The apparatus is simple, and visitors properly introduced have no difficulty in seeing the entire establishment at Gremaz, which occupies a gently-sloping piece of ground, about six acres in extent, and watered by three streams which yield collectively about 500 gallons of water per minute.

the natural dirt bottom, if not too muddy, would be preferable to cement. The tanks have the same general level, and are divided by sliding gates of wire gauze sufficiently fine to prevent the passage of the fry. Thus far all is simple and obvious. The process of Mr. Lugrin, which has been patented in several countries, consists in spreading upon the bottom of these tanks a material impregnated with the elements necessary to produce spontaneously a limitless number of *daphniæ*, *cyclops*, *limnæ*, as well as fresh water springs and the larvæ of various *ephemeræ* which form the natural aliment of trout and other salmonidæ at all stages of their growth. Once constructed and impregnated with this producing material — which is of trifling cost — these tanks go on with their work automatically and indefinitely. The water, from two to three feet in depth, being left undisturbed two or three weeks, is found peopled with swarming myriads of minute organisms of the species above named. Twenty thousand trout a year old, or three thousand two years old — which last should average nearly or quite a pound in weight — are considered a sizable flock for a pasture of that size, and the avidity with which they rush to occupy and ravage their new feeding ground is a delight to the pisciculturist. If the propagation has been ordinarily abundant these 20,000 young fry or 3,000 year-olds will subsist royally in a tank of the size indicated for an entire month. They will eat on an average 20 to 25 pounds of food per day, or 600 to 800 pounds per month. Careful experiment has demonstrated that each tank at Gremaz will produce 650 to 900 pounds of *crevettes* (fresh-water shrimps), to say nothing of the myriads of *daphniæ*, *cyclops* and other species produced in the same water during the same time. When, at the close of the month, the tank has become depleted, the gate is opened and the fish driven like a flock of sheep to a new and similar pasture. The first tank, being closed and left in quiet, immediately begins the process of reproduction, and at the end of two or three weeks is swarming again with the varied minute organic life which far surpasses in value as food for fish anything that has been yet devised by man. Thus the simple, inexpensive process goes on from year to year, the fish always healthy and vigorous and larger at two years old than those artificially fed are at the age of three years. Yearlings bred in this way are strong, and capable of making their way in any open stream or pond supplied with food and suitable for their existence. One thousand of such yearlings have been found more effective in stocking a depleted trout stream than fifty thousand young fry turned in, as has been so often done heretofore, in order to get rid of them at the tender age when artificial feeding first becomes not only necessary but difficult and troublesome. For these tender nurslings all open waters, particularly when inhabited by older trout or other voracious species, are beset with a thousand dangers which the vigorous yearling is able to escape.

It is evident from all this that the system practiced at Gremaz is equally applicable to the industrial raising of trout and other fish for market, and to the restocking of streams and ponds for

one to another of which the fish can be changed monthly, as hereinbefore described, until they reach a marketable size; and it is to be remarked that trout raised by this method have the natural firmness and flavor of wild fish, and not the flabby, degenerate character of those which have been fed on liver, offal, and other unnatural, degrading food. Once prepared, a tank or pond is permanently productive. However voracious the young fish may be, they leave the bottom of the water still peopled with myriads of parent organisms which reproduce so rapidly that, before the end of a month, the placid water becomes clouded with swarming millions of their progeny. The fecal matter dropped by the fish during their month of occupancy is sufficient to maintain the fertility of the bottom, and thus the system, once established, becomes automatic and self-sustaining.

A single attendant can have the care of a large establishment, his only duty being to drive the fish periodically from one feeding ground to another and close the gate behind them, as a farmer changes his flocks from one pasture to another.

It remains to be explained that while the *daphniæ*, *niais*, *cyclops*, and other extremely delicate species can be profusely grown only in still water, the fresh-water shrimp (*grammarus pulex*) grows abundantly in living streams. At Gremaz, rivulets are provided which flow from the springs into the tanks and carry away the overflow. These rivulets, the bottoms of which have been impregnated by the Lugin system, are filled with cresses and other water plants and produce the minute shrimps in such abundance that they are gathered daily in pansful by a few sweeps of a gauze scoop-net and fed to the fish in the swarming tanks. This part of the process is easily applicable to natural streams where a sufficiency of food does not already exist.

As to the applicability of this system to American pisciculture, there is apparently no room for doubt or question. The same natural conditions which exist at Gremaz can be found in nearly if not quite every State in the Union. The same food which is produced there may be used in growing nearly every species of fish which is artificially reared in the United States. American brook trout, the rainbow trout and California salmon thrive admirably in the tanks at Gremaz.

To conclude with the verdict of Prof. Francis Day, who, in October last, came specially from England to investigate and report upon the system which has been so successfully established there:

When I remark that in fifteen days a tank, 35 meters long by 3 broad, and 40 centimeters deep, and capable of containing 20,000 young trout, can be fully stocked with food in fifteen days, so as to be able to sustain the residents for one month without any additional supply, I cannot help thinking that Mr. Lugin has solved a difficult problem, and that his mode of cultivating the natural food of fishes will prove a great and lasting benefit to the fish

SAN DOMINGO CABLE SYSTEM.—Consul Astwood writes from San Domingo under date January 16, 1888:

I have to report the important information that this Republic is about to be placed in cable communication with the world. The cable ship has already arrived at this port with the material for laying the line between this city and the Island of Curaçoa. Operations have already begun for the fitting up of the offices, etc. It is stated that the cable will be laid within the next sixty days.

Another cable will be laid between the ports of Puerto Plata and Santiago de Cuba; the telegraph line overland, connecting Puerto Plata, Santiago and other inland towns with this city, will reach here in a few weeks.

These several enterprises will be very beneficial to the commercial prospects of this Republic.

GERMAN UNIVERSAL EXPOSITION FOR PREVENTION OF ACCIDENTS.

THE HON. THOMAS F. BAYARD,
Secretary of State, Washington, D. C.

SIR:

I have the honor to enclose herewith copy and translation of a letter, dated the 9th instant, from the President of the German Universal Exposition for Prevention of Accidents, begging me to make known in the United States, among those whom it may concern, the objects and aims of the Exposition. Accompanying the letter were three pamphlets (programmes), which I also enclose herewith.

GEO. H. PENDLETON.

[TRANSLATION.]

WILHELM STREET 55, BERLIN, *March 9, 1888.*

His Excellency the Envoy Extraordinary and Minister Plenipotentiary of the United States of America, The Honorable GEORGE H. PENDLETON.

The undersigned board of directors has the honor to give notice that a German Universal Exposition for Prevention of Accidents will be held in the months from April to July, 1889. The Exposition is to contain apparatus and appliances meant to protect workmen against the dangers which threaten them in the industrial occupations, from the knowledge and introduction of which a reduction in the number of industrial accidents may be expected.

The humanitarian views which prompt this Exposition have won the full sympathy and support, not only of the principal representatives of industry and agriculture in Germany, but also of the German Imperial and Royal Prussian state officials.

As may be seen in the three copies of the enclosed programme, the Exposition aims not only to promote a knowledge of the apparatus and appliances calculated to prevent accidents, but also to stimulate an interest in their further development and to furnish the inventors of similar protective contrivances an opportunity to demonstrate

and appliances shall also be admitted which tend to the workmen's protection and general welfare, and are therefore adapted to lead directly or indirectly to a diminution of industrial accidents.

As the workmen and handicraftsmen of all lands have an equal concern in the decrease of accidents in the industrial occupations, there can be no doubt that this Exposition will also be of interest for other countries, especially as, according to the "Conditions for Exhibitors" found in the programme, foreigners are allowed to enter their exhibits.

The undersigned board of directors therefore take the liberty to respectfully beg your Excellency to make this projected undertaking known, in the manner that may seem most fit to you, among those whom it may concern, but especially among the makers and inventors of safety apparatus in the States whose Government your Excellency represents.

The undersigned board of directors will be happy to give further information, and begs a gracious acceptance of the assurances of most profound esteem with which it signs,

Your Excellency's most humble Board of Directors of the German Universal Exposition for the Prevention of Accidents,

REIMANN ROESICKE,
Chairman.

COMMERCIAL TREATY BETWEEN ITALY AND SWITZERLAND.

A commercial treaty has just been signed between Italy and Switzerland which places the latter among "the most favored nations."

As all efforts to renew the commercial treaty between France and Italy have failed, it may be desirable to point out briefly the most important consequences of this failure. Among these are an increase of 50 per cent. in the duty on textiles imported from France into Italy, and a very large increase in the duty on minerals and manufactures of metals, and wines—including brandy. The result will probably be that Italy will import her textiles from England, and that a stimulus will be given to iron manufactures in Italy. Of much more importance to Italy is the large increase in the duties imposed by France upon wines, raw silk, and cattle imported into France from Italy. Hitherto Italy has supplied the Lyons silk mills with the greater part of their raw material, and it is believed that these mills will now be obliged partly to suspend their operations. Immense quantities of cheap Italian wines have hitherto been sent to France to be converted into "Bordeaux wine," and the importation of Italian cattle has been very large. Italy will now have to send her cattle to England, and will greatly extend her silk manufactures. The Italians have now the opportunity to improve their own wines instead of selling them as material to French winemakers, and should this be done Italy could, in the course of the next fifteen years, rival France as a producer of wines of all classes.

It remains to be seen to what extent the tariff war between France and

RAILROAD FRANCHISE IN MEXICO.

Mention has already been made of a railroad concession having been granted on December 5, 1887, for a line to commence at the port of Mazatlan (Consular District of Mazatlan), State of Sinaloa, to extend to the northwest, nearly parallel with the coast line of the Gulf of California into Sonora, to connect with the Sonora railway at some convenient point north of Guaymas; this franchise or contract was not formally confirmed by the President of the Mexican Republic, until February 23d of this year, and is a modification of the franchise or contract of the Sinaloa and Durango line which was signed on July 5, 1886.

It is proposed that this line shall pass through Culiacan, the State capital of Sinaloa into Sonora, touching at Alamos, and, as before stated, connecting with the Sonora railway.

The contract also includes a road from Culiacan or Mazatlan to some point in State of Durango with right to continue the line through the State of Coahuila to the Rio Grande, and to construct branches from either side of the lines, each branch not to exceed 62.14 statute miles in length, the said branches to be designated to the executive within five years from date of signature of the franchise.

From the port of Altata to the city of Culiacan a railway 35 miles in length is in operation. This piece of road was constructed under a concession granted to the Government of the State of Sinaloa on 15th August, 1880. The time allowed for commencement and completion of the surveys and construction of the line is the same as that stipulated by the concession of July 5, 1886, but extended so as to count from February 23d of this year.

The concession confers right to construct and operate docks, wharfs, warehouses, telegraphs, etc., as is usual in such contracts.

The road to be standard gauge, the maximum of grades to be four per cent. and the minimum radius of curves to be 325 feet. The weight of rails to be 60 pounds to the yard.

The company formed to carry out this contract can issue bonds at not less than \$15,000 nor more than \$25,000 per kilometer, and can mortgage the line at a rate not to exceed \$150,000 per kilometer. The subsidy given by Government to be \$8,000 per kilometer (equal to \$12,874 a statute mile) in bonds denominated "railway subsidy bonds," bearing 6 per cent. interest payable by the Treasury every six months.

At the end of 99 years the road and all its equipments to become the property of the Government.

Referring to a franchise granted by the Mexican Government in November of last year, mentioned in my general report of that year, for the construction of a line of railroad from Guaymas to Alamos 240 miles distant, a reconnaissance of the route has been made but no work of construction has yet been commenced nor has any material been ordered.

THE RAILROADS OF TRINIDAD.

There are $54\frac{1}{4}$ miles of railway on this island, all belonging to the Government. The dates when the various lines were opened for use were from 1876 to 1886. The line from Port of Spain to "Armia" extends about 16 miles in an easterly direction; that from Port of Spain to "San Fernando" reaches about 31 miles in a southerly direction, and the one from San Fernando to Princetown has 7 miles in an easterly direction.

These railways extend through fertile plains, and along the sugar and cocoa plantations. The crown claims the right of way, but pays a compensation to private property of about £20 per acre, on the average. The materials for constructing these railways were mostly brought from England. Telegraph and telephone communications are established along the lines. Farms and villages are appearing, and the population — principally negroes and coolies — is rapidly increasing. Manufactures are in demand, and are imported from England.—TRINIDAD, B. W. I., *February 29, 1888.*

MOSES H. SAWYER,
Consul.

MEXICAN AND CALIFORNIA STEAMSHIPS.

Referring to my dispatch dated September 7th of last year,* respecting the inaugural voyage of the first steamship of the Mexican International, Pacific, and Gulf of California Steamship Company, in compliance with a contract made with the Mexican Government by Luis Huller & Co., in 1886, which called for monthly steamers from San Diego (U. S.) to San José de Guatamala, to touch at all intermediate ports on the Pacific coast of Mexico, including Guaymas, I beg leave to add that only three irregular voyages have been made by the steamships of this company, and it is now reported that the company will not, for the present, continue to despatch steamers on the route on account of the insufficiency of remunerative traffic.

The steamers of the California and Mexican Steamship Company, making voyages from San Francisco (U. S.) to Guaymas and intermediate Mexican ports, "laid off" their steamers since the first of the year, owing to the supposed permanency of the voyages of the Mexican International, Pacific, and Gulf of California Steamship Company's steamers, before mentioned.

This month a steamer of the California and Mexican Steamship Company will commence making regular voyages to Guaymas, touching at the intermediate Mexican ports of Ensenada de Todos Santos, Magdalena Bay, Cape
 * See page 35 formerly. — GUAYMAS, *March 20, 1888.*

MEXICAN TRADE WITH EUROPE.*

Our daily contemporary, *La Patria*, greatly fears that the people of this country will become "the commercial subjects of the United States" for the reason that, while trade with the Northern Republic is daily increasing, commercial dealings with Europe are decreasing in the same proportion. The completion of the central railway, our contemporary reasons, dealt a powerful blow at European commerce with this country, and when the second trunk line connecting us with the United States shall be completed next autumn, the *Patria* considers that the absorption of the commerce of the country by the Americans will be completed. It is not the American people of the United States against which our contemporary inveighs, but against a commercial monopoly which it believes will bring political and industrial disaster upon this Republic. Our contemporary asks at the conclusion of its article: "But how could this American commercial invasion be stopped?" And its reply to its own query is: "By favoring European trade in every way possible, since our principal products find their market in Europe." *En passant* we may remark that the market of the principal products of this country is shown by Government statistics not to be Europe but the United States. While we desire to see trade with Europe increase, believing it for the interests of the country to have as many markets as possible open to it, the fact remains that neither France nor Italy, Spain nor Germany, Belgium nor Austria, show any desire to trade extensively with this country. The efforts of the *Patria* to extend the trade of Mexico to Europe must be supplemented by some practical attempt of Europeans to buy the characteristic products of Mexico. The truth is that the nations of the continent of Europe give this country the cold shoulder; they do not build the railways that are opening up formerly inaccessible but rich sections of the Republic; they do not invest in mines, or lands, but content themselves with selling as much as possible here and buying as little as possible of our national products. The proof of this is to be found in the yearly reports of the Treasury Department.

England and the United States, the great Anglo-Saxon nations, have placed in this country enormous sums of money, have built railways, operated mines and bought vast tracts of lands, conducting all their enterprises subject to the laws of the country. In the *creation* of wealth on Mexican soil the English and the Americans have expended a vast amount of capital and energy. It cannot truthfully be said that other nationalities have done the same. By encouraging the building of railways, connecting with the system of transportation in the Northern Republic, Mexico has identified her commercial interests with those of the United States and the Dominion of Canada, both her natural and most easily accessible markets, and in spite of all efforts to the contrary it will be found that economic no more than political revolutions go backward. — MATAMOROS, MEXICO, February 14, 1888.

* The brief article on "Trade with Mexico."

COPYRIGHT REGULATIONS OF JAPAN.

COPYRIGHT REGULATIONS OF JAPAN.

[TRANSMITTED BY MINISTER HUBBARD.]

We hereby give our sanction to the present ordinance relating to the copyright regulations, and order it to be promulgated. [His Imperial Majesty's Sign-Manual, Privy Seal.] Dated the 28th day of the 12th month of the 20th year of Meiji. Countersigned—Count Ito Hirobumi, Minister President of State; Count Yamagata Aritomo, Minister of State for Home Affairs; Count Yamada Akiyoshi, Minister of State for Justice.

IMPERIAL ORDINANCE NO. 77—COPYRIGHT REGULATIONS.

ARTICLE I. The term "copyright" shall mean the right by virtue of which an author shall be able to have the exclusive enjoyments of benefits arising out of the publication of a literary work or of a picture or drawing of whatever sort. The term "counterfeit" shall mean a literary work or a picture that has been published without the consent of the holder of the copyright.

ART. II. Any person who shall publish a literary work or a picture or drawing of whatever sort, in accordance with the Publication Regulations, shall be entitled to receive protection for his copyright according to the present Regulations.

ART. III. Those who desire to receive protection for their copyright must, previous to publication, apply to the Department of State for Home Affairs for the registration of their copyright, at the same time transmitting to the said Department of State, a sum of money corresponding to the money value of six finished copies of the work in question.

ART. IV. When a Government office intends to publish a literary work or a picture or drawing of any sort, and desires to obtain registration of copyright for the same, the fact shall be communicated to the Department of State for Home Affairs.

ART. V. During the period of protection, the words "copyright secured" (*hanken shoyû*), shall be inscribed upon the literary work or the picture or drawing, for which the registration of copyright has been obtained. In case the aforesaid words are not so inscribed, the registration shall lose its effect.

ART. VI. In the Department of State for Home Affairs, there shall be kept a copyright registration book, in which entries shall be made whenever application shall be made for registration; and a certificate of registration shall be issued to applicants for the same.

Notices of literary works and of pictures or drawings for which registration has been obtained, shall be published upon every occurrence thereof in the *Official Gazette* by the Department of State for Home Affairs.

ART. VII. The copyright shall belong to the author, and after the author's death, to his heir.

The copyright of reports of lectures and of speeches collected in a book form shall belong to the lecturer himself or to the speaker; but when the reporter thereof has published them with the consent of the lecturer or speaker, the copyright shall belong to the reporter, and after his death, to his heir.

The copyright for translation shall belong to the translator, and after his death, to his heir.

The copyright of literary works and of pictures or drawings published under the authorship of a Government office, of a school, company, association, or of the like, shall belong to the Government office, school, company, or association whatever, under whose authorship the same may be published.

The copyright of literary works or of pictures or drawings that have been compiled from

ART. IX. When the certificate of the registration of a copyright has been injured or lost, application may be made to the Department of State for Home Affairs for its duplication by stating the circumstances attending the injury or loss. The applicant shall, however, pay a fee of 50 *sen* for the same.

ART. X. The period of the protection of copyright shall be for the life of the author and for five years more. When, by calculating the number of years from the month in which the copyright has been registered to the month in which the author has died and adding five years to the result, it is found that the whole number of years falls short of thirty-five years, the period for which the copyright shall hold good shall be fixed at thirty-five years from the month in which the copyright was registered.

In the case of a joint authorship, the period during which the copyright shall run shall be computed with regard to the author who shall die last.

In the case of literary works and of pictures or drawings published under the authorship of a Government office, school, company, association, or the like, or in case of literary works and of pictures or drawings published after the death of the author of the same, the period during which a copyright shall run, shall be thirty-five years from the month in which the registration thereof was made.

ART. XI. In the case of literary works and of pictures or drawings issued in a series of succeeding numbers, the period of copyright shall be computed for each number from the month of its publication. But on each occasion the process mentioned in Article III shall be gone through. In the case of magazines, the process mentioned in Article III may be omitted with the permission of the Minister of State for Home Affairs.

ART. XII. The protection of copyright shall not be affected by any change, addition, or abridgement made in any literary work or picture or drawing; nor by the addition of notes, of an appendix, of drawings, etc.; nor by a change in the style of binding; nor by the increase or decrease of the number of volumes composing it.

ART. XIII. In the case of literary works or of pictures or drawings that are of special benefit to society, but that have not repaid, during the validity of the copyright, the labor and expenses of the author, the Minister of State for Home Affairs may, on the application of the copyright-holder, extend the period of copyright for 10 years longer.

ART. XIV. When a copyright-holder has died during the period of efficacy of his copyright, and when any one, believing there is no successor to the copyright-holder, desires to publish the literary work or picture or drawing copyrighted, he shall advertise the fact for more than seven days in the *Official Gazette* in more than four leading newspapers in Tōkyō, and in a newspaper at the place where the original holder of the copyright has resided. When no successor is found to the copyright within six months from the last day of advertisement, the advertiser may publish the literary work or picture or drawing and succeed to the possession of the copyright with the permission of the Minister of State for Home Affairs.

In the case of any unpublished work, the author of which cannot be ascertained nor yet can his heir be, the said work may be published and protection for the copyright may be obtained by the process mentioned in the foregoing clause.

ART. XV. Essays or other articles, or novels, which have been completed in two or in more than two numbers of the same newspaper or magazine, cannot be compiled into a book form and published within two years from the month in which the said essay, article, or novel was completed, unless the consent of the author of the essay, article, or novel in question has been first obtained.

Even if two years shall have elapsed, such essays, articles, or novels, as have already been published in a book form and for which copyright registration has been obtained, cannot be compiled for publication a second time.

ART. XVI. Any person who shall have counterfeited a literary work or a picture or drawing, for which a copyright has been obtained, shall be liable to a claim for

ART. XVII. Upon the institution of a case of counterfeit, the judge may, if the institutor of the case so requests it, temporarily stop the sale and distribution of the work in question. But when after trial it is decided that such work is not a counterfeit, the institutor of the case shall be obliged to pay the damages caused by the stoppage of the sale and distribution of the said work.

ART. XVIII. The obligation to pay damages in relation to a counterfeit shall extend to the heir of the counterfeiter.

ART. XIX. Any person who shall make a translation of a copyrighted literary work or picture, or drawing, shall make additions thereto, or abridgements therefrom, shall add notes, an appendix, drawings, etc., thereto, or shall complete the unfinished portion thereof and shall publish the same without the consent of the copyright holder; and any person who shall have violated Article XV. of the present Regulations, shall be dealt with as a counterfeiter.

Any person who shall have published the reports of lectures or speeches without the consent thereto of the lecturer or speaker, shall be liable to the same penalty as in the cases of the preceding clause.

ART. XX. The copyright of a translation shall belong to the translator, but no case of counterfeit can be brought against a person who has made an independent translation from the original. But it will be different with a translation which is proved to have been made by pilfering from another translation already published.

ART. XXI. Any person who injures the copyright of another, by intentionally making use of, or by imitating the title of, a copyrighted literary work or by combining a similar name, a similar name of a company, or a similar name of a firm, etc., shall be dealt with as a counterfeiter.

ART. XXII. Any person who, without the consent of the author or his heir, publishes a literary work or a picture or drawing, which has not yet been published, or any person who publishes a literary work or a picture or drawing not intended for sale by the author, shall be treated as a counterfeiter.

ART. XXIII. When photographs of a literary work or of a picture or drawing are taken, to [for?] the infringement of a copyright of the same, the punishment for the offence shall be the same as in the case of a counterfeit.

ART. XXIV. Any person who shall import and sell foreign counterfeits of a literary work or of a picture or drawing which has been copyrighted in this country, shall be treated as a counterfeiter.

ART. XXV. When in a case of counterfeit it is difficult to decide whether the literary work or picture or drawing in question is counterfeited or not, the court in which the case is tried may appoint at least three assessors and order them to ascertain the truth.

ART. XXVI. The term of prescription for the obligation to pay an indemnity for damages in connection with a counterfeit, shall be three years after the expiration of the period of the copyright of the original work.

ART. XXVII. Counterfeiters and such printers and book-sellers as may know the truth as to the counterfeit of the work in hand, shall be liable to a major imprisonment of not less than one month and not more than one year, or to a fine of not less than 20 *yen* and not more than 300 *yen*. But the penalty shall be meted out upon the institution of a suit by the injured party. The plates and impressions of a counterfeit shall be confiscated in whatsoever hands they may be found. As to the copies already sold, the proceeds of the sale thereof shall be confiscated and shall be given to the injured party, together with the aforesaid plates and impressions.

ART. XXVIII. Even in the case of literary works and of pictures or drawings which are copyrighted, it is prohibited to pervert the meaning of the author by mutilating the work under

ART. XXIX. Any person who publishes a literary work or a picture or drawing bearing the words "copyright secured" (*hanken shoyû*) without having gone through the process mentioned in Article III., shall be liable to a fine of not less than 10 *yen* and not more than 100 *yen*.

ART. XXX. The provisions mentioned in the Criminal Code for the mitigation of penalties on account of voluntary confession, for the aggravation of penalties on account of repetition, and for the concurrence of several infractions committed by the same person, shall not be applied in the case of the violation of any of the provisions of the present Regulations.

ART. XXXI. The term of prescription for the institution of public prosecution in connection with the present Regulations, shall be two years, and shall be computed from the time when the literary work or picture or drawing in question was sold and distributed for the last time. In case the literary work or picture or drawing in question has not been sold and distributed, the term of prescription shall be computed from the time of the last printing thereof.

ART. XXXII. The period of copyright obtained under the existing Publication Regulations shall be computed according to the existing Publication Regulations.

DRAMATIC COPYRIGHT.—IMPERIAL ORDINANCE No. 78.—REGULATIONS FOR PLAYS AND MUSICAL COMPOSITIONS.

ARTICLE I. Plays and musical compositions may be published, and copyrights may be obtained for the same, in conformity with the Publication Regulations and the Copyright Regulations.

ART. II. Any person who has published a play or a musical publication and holds the copyright for the same, may, during the period of copyright, also possess the right of performance thereof (*i. e.* of the performance of them before the public for the sake of profit). But when the right of performance is reserved, the words "right of performance is reserved" (*kôgyôken shoyû*) shall be inscribed upon the play or musical composition published.

ART. III. The right of performance of a play or musical composition may be sold or transferred, with or without conditions.

ART. IV. Any person who violates the right of performance of a play or of a musical composition shall be compelled to pay an indemnity for damages to the holder of the right of performance thereof. Any person who produces in public an unpublished play or musical composition, without the consent of the author thereof or his heir, shall be liable to the same penalty as is provided for in the above case.

ART. V. The term of prescription for the obligation to pay an indemnity for damages in connection with the performance of a play or of a musical composition, shall be one year from the last month in which the right of performance was violated.

SHIPBUILDING IN GREAT BRITAIN.*

The tonnage of the vessels launched in this country during the year 1886 was 473,000, the lowest output for many years. The tonnage built during 1887 was 578,000, showing an increase of 105,000. It is a noticeable fact that much of the building during 1887 was of craft for special trades.

There is also little doubt that the cheapness of the cost of construction helped to increase the demand for vessels. It is also worthy of remark that the class of vessels built during the past year has been of a better type; built of a material believed to be more enduring, and with engines capable of working more economically, with a lessened use of fuel.

* The table

It is evident that in all these centers the year 1887 has surpassed its predecessors in extent of tonnage. In 1886 the decrease of tonnage brought, roughly speaking, the position of the ports down to what they had started from in 1879; and the increase this year is not as great as that of 1880.

The ports we have named build by far the largest part of the tonnage of the nation. The Clyde has launched in 1887 a splendid fleet of 324 vessels, 184,963 tons; from the stately liner down to the small yacht. Our own Tyne has built 74 vessels, 104,296 tons—an increase of 21,536 tons on its predecessor. The Wear takes, as on previous occasions, the third place, enlarging its total of the previous year; and fourth on the list comes West Hartlepool, which has more than trebled its production of last year. Our local ports have, in nearly every instance, increased their tonnage, and the net result may be indicated in the fact that the ship-building yards from Blyth to Whitby have turned out 41 more vessels in 1887 than in the preceding year, whilst the tonnage was increased by the large quantity of 107,500 tons. There is another notable comparison, which may be thus given:

	Tons.
Average production of northeast yards.....	7,600
Average production of Clyde yards.....	4,400

And whilst it took 324 vessels to form 184,000 tons on the Clyde, at our local ports 171 vessels were 284,833 tons. Alike, then, in the aggregate tonnage, in the yield of the yards on the average, and in average size of the vessels, this coast takes a much prouder position than the famous Clyde.

A few words as to the material. Our returns show that there were nearly a score of ships built of wood, in addition to boats, so that the "wooden walls" of England linger still; iron is used at some ports largely—the Wear constructing nearly a third of its number of vessels of iron, but generally that form of metal is dwindling and steel is taking its place. West Hartlepool built all its vessels, save one, of the latter material; and on the Clyde more than half in number, and considerably more than half in tonnage, were steel, whilst the Tyne built about five-sixths of its vessels in 1887 of steel also.

It is interesting to notice that the "blue riband" of the trade passes to Ireland, Messrs. Harland & Wolf, of Belfast, having constructed vessels of 31,445 tons, whilst Messrs. W. Gray & Co., of West Hartlepool, take the second place with 30,243 tons, and Messrs. Russell & Co., of Greenock, follow with 27,035 tons. From this the builders' tonnage falls until we reach the return of one firm building a vessel of 12 tons.

Another feature which should be named is the increasing use of triple expansion engines. Many of the returns show that all the steamers built by the builders concerned have had the newer form of engines, and "compound" engines are like iron—giving place to what is believed to be a more economical form. "Quadruple expansion" engines also make their appearance in the return, but rarely as yet. The tendency, however, in marine engineering is unmistakable.—*Newcastle Chronicle*.

ADULTERATED SPANISH WINES.

I enclose a translation of a circular from the Spanish Minister of the Interior to the civil governors of the provinces throughout the Kingdom, embodying a Royal Decree of January 30th last, directing prosecutions to be made against the manufacturers and venders of adulterated wines. —CADIZ, February 3, 1888.

DARIUS H. INGRAHAM,
Consul.

[TRANSLATION.—CIRCULAR.]

The Council of the Association of Agriculturists of Spain, the League of Contributions of

petitions to this Ministry asking for measures to prevent the adulteration of wines and the manufacture of artificial substances which are injurious to public health.

The Minister of State gives information that wines coming from Spain have been landed at Bordeaux colored with extracts of the *hulla pit oral*, whose consumption is prohibited in France.

In Hernani, was closed by order of the Government a manufactory of artificial wines, carried on by a French subject, for violating these laws, and in Vendsell, more than 20,000 liters of wine belonging to a manufacturer of the same nationality were destroyed on account of having contained noxious substances.

These facts have appealed powerfully to the attention of the Government, because they present dangers threatening to the public health, and demand relief from one of the causes that alcoholism produces so terrible in its consequences to the individual and society. And although the evils may not as yet have reached excessive proportions, the fear that they may is sufficient for the Government to act, employing whatever means the laws provide, with the firm purpose of not yielding until a result altogether satisfactory has been obtained.

Besides these considerations there are others involving the good name of Spanish industry and commerce, which, above all, it is the duty of the Government to watch, preventing greed and bad faith from losing the market of our wines, so much sought for until now for their excellent qualities, lest they disappear under the manipulations of speculators for whom the shortest means is fear of vigorous punishment, the only way of guarding the public health, and of placing the grape and wine industries, so important to Spain, under protection from fraud and falsification.

[ROYAL ORDER.]

First. The governors of the provinces shall prosecute the sale of natural and artificial wines, aguardientes and beverages which contain noxious matters, being careful to guard from consumption those that are found in this condition, punishing the first offence by fine, and delivering over those repeating the offence, to the ordinary tribunals.

The following, in accordance with the report of the Royal Academy of Medicine and the Royal Council of Health, will be considered adulterated: 1. Natural wines which contain impure industrial alcohol and alcohol from the husks, (*cascara*) if they are not rectified and purified. 2. Salicylic acid and other antiseptic substances. 3. Foreign colored substances, those derived from the products of *pit coal* (*productos de la hulla*), as well as from vegetable or whatever other origin. 4. Artificial glucose, (*azucar de fécula*), sugar from flour or new wine. 5. Glycerine.

Second. Your Excellency will order the mayors in compliance with the preceding, to employ all means that the laws provide to have the wines analyzed, particularly those made in special establishments and those intended for exportation, and especially those sold in wine shops. The analyses shall be made in the municipal laboratories, where there are any, or in those of the institutes, taking advantage of any other whatever of the State or of the province. In towns not having these, the analyses shall be made by the sub-delegates of medicine and pharmacy and if there is none, by the town directors and the town chemist. If any sub-delegate refuses to perform this service, he shall at once lose his office.

Third. In the visits that your Excellency considers it convenient to make personally or by means of a special delegate as well as whenever the mayors believe it convenient, there shall be sealed three bottles of the wines to be analyzed; one to be kept by yourself and the second by the owner of the establishment. The third shall be sent to the laboratory for analyses, while the other shall be sent for verification in case of objection being made. The result of all the analyses shall be published in the Official Bulletin.

Fourth. The first day of each month the mayors shall render to your Excellency an account of the analyses made the month preceding. Those who neglect shall be punished by your Excellency, who on the fifteenth day of each month will send a resumé to this Ministry of the analyses and of the punishments you have

IMPROVED STOCK IN THE ARGENTINE REPUBLIC.

In closing a report on the cattle industry of the Argentine Republic, of the date of November 24, 1883, I stated that in my opinion, if it was not in its infancy, it was still in its undeveloped state, and that it would hereafter assume far greater proportions and be prosecuted with far better results; that while in the past horned cattle were only raised for their hides, and in the present only for their hides and the product of their carcasses, the time was coming when, with the influx of intelligent labor from Europe, to these would be added also the products of the dairy, but that to this end an improved breed would have to take the place of the present native animals. In other reports I have had occasion to refer to the increased interest, by means of fairs and stock exhibitions, which was manifesting itself in the improvement of the breed of horses and sheep, though in reference to the latter the business of growing fine-wooled sheep had been prosecuted for many years.

INCREASED DEMAND FOR FINE BREEDS.

A change for the better in all these branches of stock industry has been going on almost imperceptibly for several years, but recently there has been a very marked development of a taste for fine stock among those who are engaged in this department of industry. It is difficult now to visit any part of the vast plains of the Argentine Republic without noting the wonderful improvement which is now to be seen in the quality of the sheep. Probably no part of the world can exhibit to-day so many magnificent flocks of prize-wooled sheep as the Province of Buenos Ayres. In horses also, especially in the neighborhood of the cities and large centers of population, an improvement in the breed is becoming very perceptible. The small "creolle," or native horse, with its ungainly appearance, but wonderful powers of endurance, is gradually making room for a cross which, while it retains the good qualities of the native breed, is greatly superior in size and style. There has seemed to be less interest manifested in horned cattle, but now very fine crosses of the Durham and Hereford are taking the place of the gaunt and long-horned native stock.

A CHANCE FOR THE UNITED STATES.

As the United States have become noted for the wonderful results which have been produced there in the improvement of the breeds of sheep, horses, and horned cattle—some of our stock farms now not merely rivalling but surpassing the very best of Europe—it has seemed appropriate that I should officially call the attention of our stock breeders to the market which the Argentine Republic is now offering for the best grades of animals. For a while the growing demand for blood stock was in great part filled by special orders sent to England and the Continent, but more recently owners of fine animals abroad have been undertaking to

cattle that are produced abroad, the prices which they fetch being generally satisfactory and in some cases quite extravagant.

OFFICIAL FIGURES OF IMPORTATIONS.

The following figures, which I have compiled from official sources, will show the importations of breeding animals for the last four years :

Live stock.	1884.		1885.		1886.		9 months of 1887.	
	No.	Official value.	No.	Official value.	No.	Official value.	No.	Official value.
Asses.....	28	\$3,656	15	\$440	5	\$640	19	\$550
Hogs.....	10	485	3	200	33	1,699	307	2,270
Horses	79	62,582	87	17,335	85	16,170	120	22,000
Sheep	1,489	132,253	1,048	50,846	1,071	46,810	1,524	42,442
Cattle	783	135,539	185	32,525	254	58,890	506	92,763
Total.....		334,515		101,346		124,209		160,025

An analysis of the statistics shows that for the year 1884 the asses were from Spain and the hogs from Great Britain ; of the horses, 46 were from Great Britain and 22 from France, the rest coming from Germany and Belgium ; of the sheep, 1,114 were from Great Britain, 281 from Germany, and 87 from France, the rest coming from Spain, Belgium, etc. ; of the horned cattle, 740 were from Great Britain, the rest coming from France and Belgium.

For the year 1885, the asses were from Spain and the hogs from Great Britain ; of the horses, 41 were from France and 38 from Great Britain, the rest coming from Belgium and Germany ; of the sheep, 573 were from Great Britain, 326 from Germany, 117 from France, 26 from Belgium, and 6 from Spain ; of the horned cattle, 137 were from Great Britain, 29 from France, and 19 from Belgium.

For the year 1886, 2 of the asses were from Spain and 3 from France ; of the hogs, 31 were from Great Britain and 2 from the United States ; of the horses, 44 were from Great Britain, 40 from France, and 1 from Belgium ; of the sheep, 659 were from Great Britain, 234 from Germany, 94 from France, 84 from the United States ; of the cattle, 229 were from Great Britain, 7 from France, 6 from Italy, 3 from Belgium, and 1 from Germany.

For the year 1887 I am not able to state from what countries the imported cattle were received, though no inconsiderable number of sheep were from the United States, as were also some of the horses and cattle.

In the above table I have given the official or custom-house valuations, but I do not understand how they are reached. As all importations of blood stock for breeding purposes are free, I imagine that the column of " official

THE AMERICAN PIONEERS IN THE BUSINESS.

The interest, which is beginning to be manifested here for improved breeds, has in a small way stimulated some of the breeders in the United States to seek a market in Buenos Ayres for their stock. One of the pioneers in this business is Mr. E. C. Eels, of Vermont,* who has now made three ventures down here, first with Vermont merino bucks, and afterwards with both sheep and horses. During the present year several other parties from the United States have appeared in the field, bringing merino sheep and horses of the Vermont stock. And only a few weeks ago a herd of magnificent Hereford cattle, consisting of 9 bulls and 16 cows from the old established Stockfields breeding farm, at Pontiac, Mich., arrived here to find a market under the auspices Mr. E. A. Sumner.†

SALES OF AMERICAN SHEEP.

The sales of imported breeding sheep from the United States have thus far produced very satisfactory results. There is no doubt that in length and compactness of fleece, as well as in fineness and excellence of fiber, they compare most favorably with, if they have not surpassed, the very best which have come out from England or France, where the refining process is so scientifically studied. In body they may not be quite so large as the Ramboulet, but they much exceed them in weight of fleece; and thus far I am sure that all who have bought, even at very round figures, are fully satisfied with the result of their purchases.

VENTURES WITH AMERICAN HORSES.

The first ventures with American horses here found a very ready market. Heretofore the reports of the turf of Buenos Ayres have consisted exclusively of running races, and some fine specimens of English racers have been imported. There is, however, a growing taste here for fast trotters, the drives to and through Palermo Park affording sporting gentlemen fine opportunities for testing the going qualities of their horses. Horse fanciers, knowing the wonderful trotting stock which the United States have developed, were gratified at the opportunities offered for securing specimens of the breed, and were ready to pay even fabulous prices for trotters which could do their mile inside of "2.30." In most cases the purchasers obtained what they bargained for, the performances of the horses being very satisfactory; but in quite a number of instances, if one may judge by the complaints which have been made to this consulate, the credulous purchasers, trusting to the good faith of the sellers, have been rather shabbily treated in having horses foisted upon them with false pedigrees, or which did not correspond in age to their certified pedigrees, or to the entries in the "stud book;" and when they were brought down to their work were found to be ordinary roadsters. In several trotting races lately, some American blooded importations, which

*Mr. Eels informs me that he was induced to bring his Vermont breeding sheep to this market by seeing my report on the "Sheep Industry of the United States."

were guaranteed to do most wonderful work, were quite left out in the cold by half-breeds raised here in the country. The result has been disastrous to the further sale of such other American horses as have since been seeking a market here, the fair and conscientious importers suffering for the sins of those who think that "everything is fair in a horse trade." The Argentines are very confiding; but where they have been "humbled" once they become decidedly sensitive, and in the future they may be less disposed to buy, without something more than the mere assurances of the seller as to the qualities, age, or possible achievements of a horse, lest they be "stuck" with the refuse of the New York auction marts. All this is unfortunate for those Americans who have in good faith been seeking to open and continue a strong and permanent market here for our fine trotting stock. As it is well known that we have the fastest trotting stock in the world, it is to be hoped that American enterprise may yet have an opportunity of sending or bringing down here such horses as have a bona fide turf register, and whose pedigrees are beyond suspicion. If the horse is all right the price of the animal is of no consideration here. Most of the sales thus far have run from five to ten thousand dollars per horse.

HORNED CATTLE—HEREFORDS AND DURHAMS.

In regard to horned cattle, the only venture that has yet been attempted here is the herd of Herefords which I have already referred to. They were offered for sale at auction, but several circumstances conspired against the sale in that way, and they were subsequently sold in a lump at private sale, and at very fair prices considering that they came at the wrong season of the year for proper competition. Indeed, so well satisfied were the parties that I understand they propose at once to make further shipments of the same class of cattle. I think that Durhams, if of good pedigree, would also do well. Nearly all the horned cattle thus far imported from England have been of the Durham breed; though there is a growing tendency towards a preference for Herefords, for the reason that they and their crosses are thought to be able to "rough it" better during the winter months, and because their hides are considered superior.

KIND OF STOCK TO SHIP.

I may state in conclusion that all shipments of sheep, horses, or cattle from the United States for sale here should be of prime quality and have a place in authorized books of pedigrees. It would not be a safe venture to undertake to dispose of any other animals than such as have an undoubted record. For such I think there is now room and a good opening, and will be for some time to come, in the Argentine Republic. The sales at the public marts of this city last year of imported breeding stock, I am informed,

GERMAN COLONIES IN ASIA MINOR. — Consul H. M. Jewett writes from Sivas, under date December 21, 1887:

During the past year there has been put into operation a movement for the immigration to Asia Minor of colonists from Germany. There are now some hundred German families at Amasia, a city on the river Iris, one hundred miles northwest of Sivas. This is due principally to the efforts of Herr Krug, the German Consul there, who has interested himself largely in the new immigration movement.

Most of the colonists are mechanics and men of moderate means. They have engaged in milling, wagon-making, farming and other industries. Several flouring mills with improved European machinery have been erected, and this branch of business for which Amasia is well adapted, owing to its fine water power and being the center of an extensive grain district, will be largely extended the coming season. It is expected that next year will see a large addition to the colony and that several other colonies will be located in other parts of Anatolia.

While this immigration is as yet but small, it is of importance as indicating the commencement of a movement which will undoubtedly turn a part of the stream of German emigration in a new direction and it can not but be of great advantage to this country in developing resources which are now, owing to the character of the population, wholly unused.

*RUSSIAN PETROLEUM INDUSTRY FROM 1883 TO 1886.**

In continuation of my former report upon this subject—No. 92 February 25, 1887—and in view of the growing importance of the Russian petroleum industry and the gradual encroachment of Russian naphtha upon markets heretofore exclusively controlled by its great American competitor, the following statistical review and observations covering the years 1883 to 1886 both inclusive, collected and compiled by a most competent authority and kindly placed at my disposal, may not prove devoid of interest or value to those of our citizens engaged in this vast industry in the United States.

At the opening of the Transcaucasian Railway in 1883 great hopes were entertained for the more rapid development of the Russian naphtha industry, for by this means it was conceived to be possible to enter into competition with its powerful American rival in the European and Indian markets; and, indeed, a new life seemed to animate Baku, for the facilities for extracting the raw naphtha were multiplied, while numerous new factories for its refinement were established, and the production showed a steady increase from that period.

As compared with the year 1883, 1886 shows an increased production of over 250 per cent. Not taking into account the local consumption, the export in the former year amounted to less than 30,000,000 pud—150,000,000 gallons—(at 5 gallons per pud equal to 36.113 United States pounds); in 1884 it rose to 261,216,710 gallons; in 1885 to 300,149,775 gallons, while in 1886 it reached the total of 377,006,120 gallons.

Notwithstanding these results the expectations anticipated from the opening of a railway were not fully realized, owing partly to the difficulty experienced in crossing the Suram pass, and other unforeseen ~~obstacles~~.

because of the continued insufficiency of tank cars, so that a large part of the increased yield of the past four years was again forced back into the home markets by the old route via the river Volga.

The proportion of the exports to home consumption during the four years under review might be stated as follows:

	1883.	1884.	1885.	1886.
	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
Export via rail and the Baltic.....	7	4	6	5
Export via Black and Caspian Seas.....	5	7½	11	15
Total exports	12	11½	17	20
Home consumption.....	88	88½	83	80

By far the greatest portion of all the Russian petroleum has always been shipped from Baku via the river Volga, for its transportation more than 30 tank steamers besides many other vessels are plying the waters of the Caspian Sea.

In the year 1883, 131,595,605 gallons or about 90 per cent. of the total yield of the Russian oil wells were sent by way of Astrachan; in 1884, 242,700,915 gallons or about 92 per cent; in 1885, 271,165,995 gallons or about 90 per cent; and, finally, in 1886, 270,845,010 gallons or about 72 per cent., from which figures it is obvious that it was not until the year 1886 that the Transcaucasian Railway succeeded in securing an appreciably greater share of the total transportation of Baku naphtha; but it is reasonable to predict that in the future this share will not only be fully maintained, but vastly augmented for the presence of ice interrupts the traffic during about four months of the year, and the bar at the mouth of the Volga prevents the entry of the steamers plying on the Caspian Sea, and necessitates transshipment to smaller craft.

It has already been shown how the Russian home market was glutted with petroleum, due partly to the many new refineries that were called into existence in Baku after the completion and opening of the Transcaucasian Railway, which eagerly bought up and prepared for the market the extraordinarily cheap raw naphtha, but also because of the want of sufficient means of transportation, so that in the beginning of 1886 the accumulation of oil in the Russian Empire is said to have amounted to 40,000,000 gallons, half of this was stored in Zarizyn, the other half in Domnino, (the principal depot of the refineries of Nobel Brothers near Orel,) in Moscow, in St. Petersburg, in Warsaw, etc., mostly in tanks.

In the year 1886, 115,000,000 gallons more were added to this supply, so that the stock for the market amounted to no less than 155,000,000 gallons, only 80,000,000 of this enormous quantity are said to have been disposed of ~~that there was~~ carried over into 1887 a stock of 75,000,000

A St. Petersburg newspaper in April of last year stated that the association known under the firm of Nobel Brothers, the largest refiners of raw naphtha in Russia, at the moment of the reopening of the water, had 16,500,000 gallons of their own raw naphtha on hand, and that in their reservoir at Baku there was a stock of not less than 6,000,000 gallons of petroleum; 1,675,000 gallons of lubricating oils and residue, and 1,500,000 gallons already loaded and ready for transportation awaited a market.

It is not very difficult to realize that under such conditions the price of raw naphtha has been very much depressed; it fluctuated between $1\frac{1}{4}$ and $1\frac{1}{2}$ copecks (a copeck is 7.77 cents) per pud of 5 gallons at the wells; the cost of transporting it to the refineries by rail is $1\frac{1}{2}$ to 2 copecks (11.3 to 15.5 cents) per pud, or $\frac{1}{2}$ to $\frac{3}{4}$ copecks (.38 to .59) by pipe line, making its net cost at the refinery $1\frac{3}{4}$ to $3\frac{1}{2}$ copecks (1.3 to 2.6 cents) per pud.

As $3\frac{1}{2}$ gallons of raw naphtha yield 1 gallon of refined petroleum, and as the employment of the residue, besides affording the requisite heating material, produces also lubricating oil, etc., in sufficient quantity and value to about cover the expenses of refining, it follows that the net cost of a pud of Russian petroleum in Baku is about from $6\frac{1}{4}$ to $12\frac{1}{4}$ copecks (5 to 9.7 cents.)

The market price of prime quality refined petroleum in Baku shipped to Russia via Astrachan was 12 to 15 copecks (9.3 to 11.6 cents) in the latter part of 1886, while in former years it ranged between 22 to 27 copecks (17 to 20.9 cents) then gradually fell to 20 to 24 copecks (15 to 18.6 cents,) and in the beginning of 1886 declined to 14 to 16 copecks per pud (10.8 to 12.5 cents.) Second quality petroleum in the latter part of 1886 sold at 8 to 12 copecks (6 to 9.3 cents,) while in the winter of 1885-86 it still commanded 12 to 13 copecks (9.3 to 10 cents,) and during the period of navigation in 1885 readily sold for 18 to 21 copecks (14 to 16 cents.) It will be observed from the foregoing that under the most favorable conditions, the margin on refined Russian petroleum is merely nominal.

Lubricating oils of prime quality sold at from 70 to 130 copecks (53 to \$1.01) the pud at the end of 1886, while in former years 130 to 150 copecks (\$1.01 to \$1.16) were realized. Second quality has fallen from 70 to 100 (50 to 77 cents) to 50 to 90 (38 to 70 cents) copecks. Naphtha residue cost in 1886, during the season of navigation, 4 to 6 copecks (3 to 4.6) per pud, while during the winter months it was sold for from $1\frac{1}{2}$ to 3 copecks (1.1 to 2.2 cents.)

Owing to the immense stocks on hand in the interior of Russia, as has already appeared, the price of refined petroleum in Zarizyn is even lower than in Baku; the freight between these two points is 15 copecks (11 cents) per pud; but notwithstanding this oil at Zarizyn is offered at 25 copecks (19.4 cents) the pud with no takers, this may also account for the fact that in 1886, 5,000,000 gallons less petroleum were shipped via Astrachan than in the preceding year.

As a result of the

Russia via Astrachan, that was subsequently exported to foreign markets, was comparatively limited; it is calculated that in volume it amounted to 9,138,175 gallons in 1883; 8,466,825 in 1884, and 12,950,000 in 1885, and for 1886 the exact figures are not yet at hand; the destination of these exports in 1883 and 1884 was principally Germany, and since 1885 also Great Britain.

It would appear that owing to the withdrawal from traffic of the tank steamers of the Batoum-Odessa line, the Russian naphtha products have recently been shipped in tank cars via the Prussian frontiers and the Baltic seaports, at a considerable saving in freights it is said.

According to custom house exhibits, the average prices per pud of petroleum in the St. Petersburg market in December 1885 and 1886 were as follows:

	1885		1886	
	Copecks.	Cents.	Copecks.	Cents.
Russian petroleum	110 to 120	85.5 to 93.2	110 to 112	85.5 to 87.5
In tanks.....	90	70	80 to 82	61. to 61.2
American	240	\$1.86.6	240	\$1.86.6

From these figures it will be observed that Russian naphtha costs but about one-half of American refined petroleum in the St. Petersburg markets.

The following table shows the transportation of Russian naphtha via the Transcaucasian Railway:

	1883.	1884.	1885.	1886.
	Gallons.	Gallons.	Gallons.	Gallons.
Petroleum	13,585,100	19,414,870	36,761,240	69,661,495
Lubricating oil.....	500,000	2,660,000	425,000	5,101,620
Residue.....		5,250,000	5,095,000	7,862,170
Raw naphtha.....	725,000	205,000	2,520,530	13,417,685
Total.....	14,810,100	27,529,870	44,801,770	96,042,970

While this exhibit looks favorable enough so far as the increase in the traffic of the Transcaucasian Railway is concerned, the water route via the Black Sea is not yet fully assured, owing to the lack of means of transportation, which is equally true of the Transcaucasian railway.

As a result of the latter, contracts made by refining companies to deliver their manufactured naphtha products at the Black Sea ports at certain fixed periods becomes therefor almost next to impossible, notwithstanding a mixed commission has been charged with the pro rata distribution of the tank cars of the Transcaucasian Railway among the different refining firms. It not infrequently happens that houses having contracts to fulfil and being in want of more tank cars than their pro rata shares are obliged to lease them from their neighbors and competitors, paying therefor a premium of from 10 to 15 copecks (7 to 10 cents) per pud.

freight rates of the Transcaucasian Railway are very high. One pud of naphtha product by tank car from Baku to Batoum costs $16\frac{1}{2}$ copecks (12.8 cents); the distance is but 839 versts, or 556 miles. The Russian Government, it is understood, has recently taken this matter in hand with a view to remedying the existing defects, and, it is said, proposes to substitute a tunnel for the steep grade of one to twenty of the road over the Suram Pass, while pending its construction and completion work on one or more pipe lines is to be immediately commenced.

Another formidable project is to connect the Caspian with the Black Sea by a pipe line, with vast refineries to be established at Batoum; while yet another proposition is to lay the line to Poti instead.

Of the naphtha products carried by the railway by far the greatest part is exported, notably via Batoum. The increase in this traffic has been a most decided one, and no pains or expense are being spared to find new markets outside of Russia.

In 1883 the total exports via Batoum to a few countries was 6,241,070 gallons; in 1884 it had already reached 18,273,525; in 1885, 31,943,890, while in 1886 it had grown to 54,216,455 gallons, an increase of over 750 per cent., distributed among the following countries:

	Petroleum.	Lubricating oil.	Residue.	Raw naphtha.	Total.
	<i>Gallons.</i>	<i>Gallons.</i>	<i>Gallons.</i>	<i>Gallons.</i>	<i>Gallons.</i>
In the month of January.....	£,469,065	1,096,950	.....	.....	.....
The balance of the year:					
Egypt.....	765,000	.....	.....	.....	.....
Algeria.....	259,000	.....	.....	.....	.....
Belgium.....	2,337,650	1,004,650	1,758,365	.....	.....
Bulgaria.....	75,000	.....	.....	.....	.....
Denmark.....	335,750	.....	.....	.....	.....
Germany.....	1,165,000	850,000	127,700	.....	.....
France.....	1,708,400	1,264,335	971,490	.....	.....
Greece.....	641,790	1,795	.....	.....	.....
Great Britain.....	1,087,500	1,919,115	245,000	.....	.....
Italy.....	2,223,480	293,400	785,500	.....	.....
Holland.....	.....	120,000	.....	.....	.....
Austria-Hungary.....	5,810,880	141,750	3,803,170	.....	.....
East India.....	2,181,100	.....	.....	.....	.....
Roumania.....	4,472,460	58,650	22,800	.....	.....
Spain.....	308,000	.....	.....	.....	.....
Turkey.....	11,310,470	9,055	4,410	.....	.....
Tunis.....	6,930	.....	.....	.....	.....
Total via Batoum.....	38,167,525	6,760,500	7,718,435	1,560,000	54,216,460

Among the new markets into which Russian petroleum has recently made its entry may be mentioned Syria, Egypt, Algeria, Belgium, Denmark, and East India.

The number of steamers carrying the naphtha products from Batoum has lately been greatly increased.

The following table shows the exports via the Russo-Austrian and Russo-Roumanian frontiers, and by sea via Odessa:

Year.	Petroleum.	Lubricating oil.	Residue.	Raw naphtha.	Total.
	<i>Gallons.</i>	<i>Gallons.</i>	<i>Gallons.</i>	<i>Gallons.</i>	<i>Gallons.</i>
1883	470,050	139,660	5,575	697,675	1,312,960
1884	1,038,615	144,120	85	2,382,315	3,565,335
1885	815,280	292,600	.....	4,432,620	5,540,500

In the year 1886 the traffic via Odessa was greatly augmented.

Freight from Batoum to Odessa is 8 to 9 copecks (6 to 7 cents) per pud, which is considered a high rate for such a short distance.

It may be well to mention that it has been maintained—with what degree of veracity I cannot state—that the repeated pumping of petroleum from reservoirs into tank steamers and tank cars, and *vice versa*, does not only not occasion any material loss, but, on the contrary, by reason of the introduction of air, is said to improve the oil. It would seem necessary to make such statements the subject of a special and thorough study and investigation before it can be positively determined in how far compressed air will have an influence on its illuminating power.

The extension of the Transcaspian Railway and the consequent opening up of new markets has developed a considerable increase in the consumption of petroleum in the region traversed by the railway, and a still greater demand for Russian naphtha is therefore expected, all the more so as it is proposed to complete the construction of the road. The figures for the years preceding 1886 are not at hand, but in that year the total transactions in the Transcaspian region amounted to 6,917,045 gallons.

The exports to Persia are continually assuming larger proportions.

The following tables have been published:

Year.	Petroleum.	Solar oil.	Residue.	Raw naphtha.	Total.
	<i>Gallons.</i>	<i>Gallons.</i>	<i>Gallons.</i>	<i>Gallons.</i>	<i>Gallons.</i>
1883	476,655	.....	283,045	443,670	1,203,370
1884	691,935	.....	18,000	529,565	1,269,500
1885	810,770	.....	168,645	665,115	1,644,530
1886	1,474,225	185	334,720	806,900	2,616,630

The naphtha deposits in the Kuban region yield on an average yearly about 2,500,000 gallons. Half of this is sent overland to northern Caucasia, while the rest is exported by sea from Novoorossysk.

In 1885 the following quantities were transported coastwise:

Gallons.

For the first six months of 1885 the exportation was only—

	Gallons.
Petroleum.....	180,000
Residue	70,000
Raw naphtha	55,000
Total.....	305,000

In the second half of the year the exportation amounted to 805,000 gallons, bringing the total of 1886 up to 1,110,000 gallons, or a decrease of 245,500 gallons.

Between the proprietors of the larger refining establishments and their smaller competitors there appears to exist considerable rivalry, and the former often accuse the latter of disposing of their naphtha products at prices that are prejudicial to the general markets; on the other hand, the smaller refiners retort by asserting that their more fortunate competitors are flooding the markets with such immense quantities of oil that they can only hope to secure a footing by offering inducements in the way of prices.

A movement has lately been inaugurated by which it is expected and hoped to concentrate the sale of the raw naphtha to a few firms, or entrust it to brokers, by which method it is hoped the demand and supply, as well as prices, may be harmonized and regulated. —BEIRUT, *February 8, 1888.*

ERHARD BISSINGER,
Consul.

THE RUSSIAN PETROLEUM EXHIBITION.

[CORRESPONDENCE OF THE GLASGOW HERALD.]

If ten years ago anyone had ventured to predict that in the present year Russia would be holding a Petroleum Exhibition, and that the oil industry would be well established and have a world-wide reputation, he would have been laughed to scorn, not simply by incredulous Americans, but also by the Government and press of this country. Yet, in the interval, the petroleum trade of Russia has expanded so rapidly, and has startled so often the public by its marvels, that it is already regarded as commonplace, and excites but little interest except in commercial and official circles. For years the Government took no notice of it whatever. The industry enjoyed absolute free trade, and from the moment the oil-borer paid the Government stamps on the lease of the land he hired from the Baku proprietors to the time he fixed the receipt stamp on the invoice of the refined oil sold to the customer at Astrakhan, Moscow, and St. Petersburg he paid no dues or taxes, and was wholly free from official supervision. Until 1887 the petroleum industry enjoyed quite a unique condition of freedom among Russian industries. Things have now begun to change. The Government has suddenly commenced to display an affectionate interest in its career, and the petroleum industry is becoming the sport of commissions, committees, and *tchinovniks* of every kind. The industry has been placed under the special protection of the Ministry of Crown Domains, and the Minister, Senator Ostrovsky, has been twice to Baku. The Governor-General of the Caucasus has also been to see the oil wells, and the Minister of Railways as well as the Minister of Finance; while, since the Petroleum Exhibition was opened, most of the Grand Dukes have visited the display, the Committee of Ministers have had the entire exhibition a whole night to themselves, the

Petroleum, for the moment, is quite a fashionable topic in select court circles. Those officials and officers who years ago had grants of oil lands given them by the late Emperor, and have not sold or mortgaged them, are regarded with universal envy. Every functionary who has happened to pass through Baku in the course of his career is treated as an authority on oil, and has to submit to a cross-examination in regard to crude, kerosene, pipe lines, tank steamers, liquid fuel, etc., which would tax the knowledge of the cleverest writer on petroleum. So far so good. The interest in Government circles excited by the exhibition is bound to benefit Baku, but at the same time there is a drawback to the affection displayed by the Government for an industry neglected so long. Already a body of inspectors have been appointed to supervise the industry, to support whom the refiners have to pay a slight tax; while an impost has just been established on the refined article, which is a bad augury for the future. True, excise duty is refunded if the article be exported, but all the same it affects foreign trade. Under the most favorable circumstances kerosene invariably suffers from leakage in transit, particularly in barrels. The duty has to be paid before the oil quits Baku, at the rate of one copeck a pood (nearly a farthing per $4\frac{1}{2}$ gallons,) and no allowance is made at Batoum or any other outport for leakage. Hence, if 100 copecks be paid on 100 poods at Baku, and in transit 20 poods happen to leak, the officials refund money only on 80 gallons, and the exporter loses 20 copecks by the transaction. On this account the new impost, although intended not to interfere with foreign trade, really does affect it, and the Minister of Finance refuses to remedy the defect. Up to now he is reported to have netted three million roubles, or a quarter of a million sterling, on the kerosene tax that came into force the beginning of the present year.

The Petroleum Exhibition was intended to have been of an international character, but it cannot be said to merit the designation. America is not represented at all, nor yet Burmah, Galicia, Roumania, or any other oil-producing country. Scotland sends nothing whatever, not even an oil pipe, notwithstanding that the Glasgow firm of A. & J. Stewart has in its time despatched more miles of oil piping to Russia than any other foreign firm. The jealousy of rival countries at the development of the Russian industry, which is injurious to their own, is probably at the bottom of the refusal to send samples of oil and oil products; while as prizes were only offered for lamps, manufacturers of pipes, tank steamers, and oil machinery had no great inducement to send models. Yet even of the 200 or 300 lamp-manufacturing firms of England and Scotland only four have sent a display of lamps; and Continental firms have not been a whit more enterprising. On this account the exhibition is really more a national than an international one, and owes its interest not to any comparative display of the progress of the world's oil industry, but to the light it throws upon the development of that of Russia. If longer time had been given, and the exhibition had been better advertised abroad, the result might have been different, although in any case St. Petersburg lies too much out of the chosen highways of the world to attract many visitors, above all in winter, when, however pleasant the Russian capital may be, traveling to and from it is not at all agreeable. On this occasion the winter is the severest ever recorded at St. Petersburg since Peter the Great founded it in the early part of last century, and has kept many would-be visitors away.

Not that the exhibition is not warm enough. The display is held in the building constructed for the International Exhibition of 1870, and in the gas and lamp section a nightly temperature is maintained of from 100 to 120 degrees Fahrenheit. To pass from this equatorial temperature into the Arctic climate outside, where the record has been night after night for two and a half months from zero Fahrenheit to 32 degrees below zero, is a transition which only a Russian can enjoy. It is true that everybody sheds his pelisse and overshoes on entering the place, and that a good buffet lies between the Equator and the North Pole, thereby enabling one to do quarantine between the two temperatures. Still, the sensation on getting into a room where a hot flat-iron being gently drawn over the face and

apparatus; and finally the section devoted to electric lighting. The first is oppressively hot, the second disagreeably chilly, while to reach the third one has to pass underground through the damp model of a coal mine, attaining afterwards the cold, violet glare of the electric light, which is not at all inviting. The exhibition, besides containing petroleum, illustrates also every kind of light. It might have been better in some respects if the Imperial Technical Society had stuck to petroleum only, and worked that thoroughly; but the presence side by side of oil, gas, and the electric enables one to effect a useful comparison between the rival methods of lighting and note the progress made in recent years of each.

The keen competition between the three which prevails in England is reflected also at the exhibition. Among Russian experts who are not fanatically attached to any one system of lighting the opinion is dominant that a useful future exists for all three. None the less, although, speaking generally, more money has been spent on special displays of electricity and gas than has been the case with oil (several Russian petroleum firms have imitated foreign houses, and not exhibited at all,) it is impossible for any unprejudiced person to go through the exhibition without arriving at the conclusion that if the exhibition really does represent the actual state of things in Russia, gas and oil maintain an ascendancy in progress over electricity, and that oil is a most formidable competitor of gas. And that the exhibition does represent what prevails in Russia in regard to lighting no one acquainted with the relative progress of oil, gas, and electricity of late years in Russia can doubt. I shall have some official statistics to give on this score later on. Meanwhile, suffice it to mention that notwithstanding Jablochhoff was a Russian, and that the Government and the municipal councils of Russia have given a warmer support to the various methods of electric lighting than any administration abroad, only a few streets and buildings here and at Moscow are lit with the electric light, while quite recently, after weeks of discussion as to the rival merits of electricity, gas, and kerosene, the Municipal Council of St. Petersburg decided against the former two in regard to lighting certain portions of the city, and ordered instead the installation of 8,000 kerosene lamps. I am quite aware that the electric light display at the exhibition is not a complete one, but this is a defect it possesses in common with the display of gas and oil. Speaking impartially, it is quite as representative of the actual state of things in Russia as the other two, whatever may be its imperfections from the international standpoint. One has only to go along the Nevsky, the Bolshoi Mor Skoi, and one or two other main thoroughfares to realize that although they are illuminated—and illuminated very well—with the electric light as an experiment, the chief enemy of gas is oil; this, too, in spite of coal gas being almost as cheap at St. Petersburg as in London. It is true that many shops are brilliantly lit with the Siemen's regenerative gas lamp, and that the Wenham and Albo carbon lights are in vogue, but to one shop that has abandoned the ordinary gas jet for those novelties quite half a dozen have abandoned gas altogether for oil; and yet the annual consumption of gas shows little sign of diminution. The tendency prevails here that has been remarked at home—that as light becomes cheaper people use more of it. Moreover, it is becoming the fashion to illuminate shops and houses more brilliantly every year. A shop on the Nevsky using a Siemen's regenerative gas lamp, or two or three 80 candle-power kerosene lamps of German manufacture, compels its neighbors, by the relative gloom it occasions in their windows, to either follow its example or else increase the number of gas jets or ordinary kerosene lamps. As one who has repeatedly visited St. Petersburg during the last 15 years, I must confess to have never observed such progress in lighting as during the last three years, particularly in regard to oil. In the ordinary thoroughfares of the capital, as well as in the leading streets, shops are lit with lamps of a size and intensity that would astonish shopkeepers at home. It would do those good who are downcast about the future of paraffin oil to pay a visit to St. Petersburg and see how oil can be rendered a favorite method of lighting, and an increasingly popular one by means of good lamps. This is a lesson to be learnt at any time in St. Petersburg. but at the exhibition it is forced

enabling one to institute a comparison between Siemen's regenerative gas lamps, Wenham and Albo carbon lights, Sugg burners, and Welsbach incandescent lights blazing brilliantly on one side of the hall and mineral oil lamps of the Defries, Kumberg, Schnoor, and other firms blazing with equal brilliancy on the other. On a long table at the end of the gas exhibits are displayed alight nearly 100 lamps competing for the prizes for safety and brilliancy of light. The cheapening of oil the last few years has caused a perfect revolution in the trade. It is not simply that a score or more of lamps have been invented, but an infinite variety of chimnies and globes have come into existence, representing inventions for rendering them more durable, for enlarging the flame, and for giving beauty to the light; while there are all manner of patents in the shape of flame spreaders, extinguishers, and safety appliances of various kinds. Improvements made by glass and metal manufacturers march side by side with the advances in the burner itself; and that the co-operation of both is absolutely essential for the success of a lamp is demonstrated at the exhibition, where certain German lamps with burners of considerable candle-power are hardly looked at because no taste is displayed in their manufacture; while, on the other hand, Russians turn up their nose at the duplex lamp, in spite of the beauty of many of the lamps displayed, because the burners do not give light enough. This is an important lesson to be learnt at the exhibition, and should be borne in mind by lamp manufacturers in England. More than one Continental firm has established a good business in Russia by keeping this in view, and the brilliancy and beauty of their lamps have had much to do with the remarkable development in the demand for oil that has taken place here the last two years, and which has reacted beneficially upon the industry at Baku. — ST. PETERSBURG, *March 8, 1888.*

One of the first things that strikes a foreign visitor on entering the Petroleum Exhibition is the display of photographs on the walls, accompanied by maps of the petroleum districts of Russia and tabular statements of the progress of the industry from the time Baku was seized from the Persians in the early part of the present century. The photographs are not many, nor are they particularly good, but they serve a useful purpose in illustrating the growth of oil depots in the principal Russian towns, and can not but convince the most sceptical critic of the wonderful copiousness of the petroleum wells of Baku. During the last five years the European public has heard from time to time of the bursting forth of a new fountain of oil on the Apsheron peninsula. Many of the photographs show these fountains in course of eruption, and a wonderful sight they are, spouting 200 or 300 feet high, forming huge shoals of sand round about the orifice of the tube, and dropping oil and sand for hundreds of yards away. Here can be seen huge lakes of oil round about the fountains, large enough for boats to run a race in, while a fountain on fire—one of the incidents of last year—has the aspect of Vesuvius in a state of eruption. Other photographs show the rows of reservoirs, holding already nearly 20,000,000 gallons of kerosene, that have sprung up like mushrooms at Batoum the last two years. A whole series illustrate the actual condition of the town of Baku, displaying long lines of handsome streets solidly built on a site that ten years ago consisted only of desert sand and camel-thorn. The Nobel firm shows a picture of a little town they have created at Domino, near Orel, where they have established their central oil depot for European Russia. On one side of the extensive station built by them are 8 groups of tanks, 4 in a group, or 32 altogether, holding collectively over 20,000,000 gallons of oil. On the other side are the numerous houses built for the employés. The maps are equally striking. A new one of Baku shows a whole fringe of piers jutting out into the bay from the refineries, and allowing over a hundred steamers to take in cargoes at the same time. Most of these piers are connected also with the railway that runs away west to Batoum. Sprinkled among the refineries are such

Reservoirs containing 6,000,000 gallons of astatki, or oil refuse, belonging to

Town. It is in this new White Town that the huge refinery of the Rothchilds is situated, side by side with the colossal establishment of Shibaëff & Co.—a firm only now becoming known in Europe, but which has for years turned out 6,000,000 gallons of oil per annum, including lubricating oil unrivalled in Russia. Another map, sent by the authorities of Batoum, shows many a petroleum pier stretching into the harbor which the late Earl of Beaconsfield was declaring ten years ago could only hold seven men-of-war, while a red streak indicates the new fort Russia is constructing there at a cost of £300,000; and which is to be protected by a turret. It is interesting to note that on this official map the Turkish forts, which were to have been rased, are shown to be intact.

Looking at these maps and photographs, so full of instruction as to the wonderful growth of the Russian oil industry during the last decade, the visitor who has not followed closely the growth of the trade, and kept himself clear of conflicting controversies, can not understand the pessimist wail that from time to time has proceeded from Baku and encouraged the hope that the Russian bladder might burst and leave free the oil industries of Scotland and America from the depressing effects of severe competition. The most careless and superficial stroller in the exhibition can not but be convinced that there has been an extraordinary rapid growth of the trade, and that the growth is still continuing. Yet if he mixes with the petroleum experts and the representatives of the petroleum firms who visit the exhibition almost every evening, and find the buffet the most congenial place, he will constantly hear melancholy opinions expressed that would appear more fitting in the mouths of the hard-pressed oil refiners of Scotland and America. This anomaly, however, is susceptible of easy explanation. The present tendency at Baku is for great firms to crush out and supercede small ones, and the expiring groans of the latter make themselves heard all over Russia. Then most of the larger firms, in their eagerness to push the trade, work up to the utmost limits of their capital, and occasionally get hard pressed. Finally, it is utterly impossible to persuade the Transcaucasian and other railway companies to increase the transport facilities, or induce the Minister of Railways to force them to do so, whether they like it or not, without representing the Baku industry in the blackest colors as being on the verge of ruin. Moreover, there has been raging for two years a war between the rival firms and capitalists interested in the kerosene pipe line over the Suram Pass and those whose money is staked on the crude pipe line from Baku to the Black Sea; and, in order that each might win, all manner of distracting statements have been purposely circulated, which only those behind the scenes can clarify and appreciate at their proper value. Many of these controversies have been echoed, and many false statements copied innocently in the European press, arousing expectations of an ability on the part of America and Scotland to cope with the competition of Russia, and by combined action overcome it. To deal with them in detail would be to fill columns with matter of very little interest to the general reader, and I shall not, therefore, attempt to do so. Far better to describe how the industry actually stands, what the aims of its leaders are, and what further developments of the industry may be expected in the immediate future. I shall do my very utmost to be impartial in the matter, and perhaps may be able to drop a suggestion here and there which may enable Scotch oil refiners, if not to repel Russia's competition, at least to manage to rub along in spite of it.

The first point to determine is the question of the copiousness of the present supply, and how long it is likely to last. In the exhibition are displayed samples of oil and ozokerit from Ferghana, Transcaspia, the Island of Tchelekon, in the Caspian Sea, the government of Tiflis, the Kuban promontory of Cis-Caucasia, and the Crimea, as well as from Baku; but although these are all very interesting, and attract much attention, it is quite immaterial to deal with them if it can be proved that the Baku supply will maintain for years its present copiousness. This is not a very difficult matter. The supply, in the first place, is several thousand years old, and the earliest references in history to the Zoroastrian worship of fire in Old Persia connect Baku with the adoration of the flame.

Baku speaks of the amazing copiousness of the oil flowing from the ground, and even so far back as the time of Marco Polo the Persians used to work the springs and export oil from the spot. Since boring on a large scale was introduced ten years ago the quantity of oil yielded by the wells has been prodigious. The records of some of them beat the most famous "gushers" known in the United States. Repeatedly a single well has spouted for weeks more oil than was being produced by all the 25,000 wells of the United States put together. The circumstances of most of the petroleum on such occasions being wasted has led to a clamor being raised that the Baku oil producers were recklessly draining the Apsheron peninsula dry. But although the cry is a very useful one, in so far as it is gradually leading to restrictive measures against an infamous waste of one of Russia's most lucrative resources; yet, as a matter of fact, the outpour of oil is exercising but little appreciable effect on the supply, and even if increased, is not likely to do so for generations to come. This is proved clearly enough by the fact that both last year and the year before, in spite of the preceding clamor, the fountains were even more numerous and powerful than before, while there was not only no very serious effort required to produce the oil—the spouting wells being very little deeper than previous ones, and in some cases not so deep; but some of the fountains broke forth in quite a new district where a copious supply had not been expected, and experts had even declared no large "spouters" could occur at all. If it be borne in mind that the area of oil-saturated country of the Apsheron Peninsula is 1,600 square miles, and that only five or six miles have yet been pricked for oil, it is really only prejudiced or ill-informed persons who can imagine the Baku supply likely to give in before the next century. Accuracy, as Sir Jas. Paget has been recently pointing out, is a quality as valuable in commerce as in science. It may suit Transatlantic capitalists interested in the American oil fields to seek to discredit the Baku petroleum supply by circulating stories of an impending impoverishment; but the Scottish oil trade, let alone the American, can not be revived by these means, and it is far better, therefore, to accurately define the worst, and ascertain whether the Russian competition can be met or not, than persist in dwelling in a fool's paradise. Against the three cardinal facts—that the supply has been naturally a copious one for countless ages, that only 5 out of 1,600 miles of oil country have been yet worked, and that the fountains last year were even more remarkable than the previous ones, can only be set the single counterpoise that the wells have to be pushed a trifle deeper every year. This, however, is capable of an explanation that deprives it of all significance. Nearly all oil wells in every part of the world have to be deepened time after time as the supply slackens. The exceptional cases of a well yielding oil year after year from the original depth are very rare, and there are not parallels to the career of the celebrated Kormilitza, or "Wet Nurse," well at Baku, which for twelve years gave every day a supply of 32,000 gallons of oil, or Mirzoeff's No. 5, which has given 40,000 gallons of oil every day for six. As a rule, after a while the supply slackens, and the owner pushes the bore deeper till he gets a fresh yield of a copious character, the process going on until the American oil producer sometimes penetrates nearly 3,000 feet. The Russians, however, are a long way off that. At Baku a well of 800 feet is considered a very deep one, and the average is still under 500 feet. It will be quite time to talk of Baku drying up when the present wells reach the American depth of 2,000 or 3,000 feet. In the meanwhile there is nothing out of the common in the wells being sunk deeper—the rate is very slow—because it is obviously cheaper for a man who has a tube 800 feet down to push his bore 20 or 30 feet deeper for fresh oil than to abandon the well and start a new one alongside, even though he may feel certain of getting oil at 400 or 500 feet. Hence the circumstances of there being now wells 800 feet deep where a few years ago there were only wells 700 feet deep does not in the least prove that the general supply is becoming scarce, although more than once persons ignorant of the practice of well-sinking and having but a limited knowledge of the practice of well-sinking

misunderstanding between the professor and the committee, this eminent savant has held aloof from the exhibition and refused to have anything to do with it. This is a pity, for the Professor is one of the greatest, if not the greatest, living authority on petroleum, and his absence from the exhibition is a serious drawback. Years ago, at the instance of the Russian Government, he made an exhaustive study of the petroleum fields of America, and has repeatedly visited Baku since. England not long ago conferred upon him the Davy Medal, and his name is held in high esteem among English scientific men, although many of his works yet remain untranslated from the Russian language. Briefly, Professor Mendelaëff, after long research, particularly during a prolonged stay at Baku last year, has formulated the theory that petroleum owes its origin to water sinking through crevices in the earth's crust to the molten interior, where it undergoes a chemical change in coming in contact with the oxides of metals, and is ejected again towards the surface in the shape of gas, which gas parts with petroleum in passing through the cooler strata, and either issues through the pores of the surface in due course or remains below until liberated by the boring rod, when it shoots up accompanied with oil, or, as in the case of the "natural gas" wells of America, without it. Opinions vary at the exhibition as to the tenability of this theory; but, with the exception of Professor Lisenko or Mr. Gulishambaroff perhaps, there is really no one competent to criticise it, certainly not the oil producers themselves, whose scientific knowledge of the subject is extremely limited. To discuss the views put forth for and against it, however, would occupy too much space, and would, moreover, be of very little value, since the question of the practical inexhaustibility of the copious Baku supply for many years to come rests not upon any theory, but upon facts beyond the reach of criticism.

No attempt has been made at the exhibition to show any boring instruments nor the operation of boring, except by means of a few diagrams displayed by the Nobel firm. The cost of sinking a well ranges from £1000 to £1500. What can be obtained for such an expenditure may be illustrated by the result of boring the Droobja well, which cost £1500. This spouted for 115 days, the yield being 3,400 tons a day for 43 days, 1,600 tons a day for 31 days, 900 tons for 30, and 600 tons for 11 days. The well was then capped over, and the supply kept underground for further wants. The total amount of oil spouted by this well, according to the lowest estimate, was 220,006 tons, or 55,000,000 gallons, and according to the highest, 500,000 tons, or 125,000,000 gallons. Had the oil been in America, it would have realized a million sterling. At Baku the bulk of it was lost. The same was the case with the great Markoff fountain last year, which spouted oil and sand 400 feet high—a veritable volcano. On windy days the oil spray was carried 8 miles away. The Markoff fountain was situated not far off the Droobja, which pessimists had prognosticated erroneously would drain the whole area. On this occasion the Russian Government, which had been angered by the waste of oil from the Tagioff fountain—which spouted 11,000 tons a day the previous year, and endangered the town of Baku by raining oil upon it, although three miles away—gave permission to the other Baku firms to lynch the "gusher" at the owner's expense. Accordingly they sent their best engineers to the spot, and after several unsuccessful attempts the well was finally capped over, and a stop put to the disgraceful waste of oil. All the same, no law exists to prevent any foreigner or Russian repeating the same destruction to-morrow. Large firms, like Nobel Brothers, mostly manage to have good engineers and the best appliances on the spot to check a "gusher" at the outset, and allow the supply to flow as they want it; but the native firms bore heedlessly, and for want of "caps" at the right moment, all control is lost over the well, and it belches forth millions of gallons of oil, forming rivers that flow away to the Caspian Sea or sink into the earth again. To-day's telegrams from Baku announce that such a one is spouting at the present moment, causing the price of crude oil to fall to 20 gallons for a penny. If there happens to be a slight rise in the price of oil—*i. e.*, if it rises above a penny for 10 gallons—the large firms build reservoirs and catch some of the oil, for which they pay a mere trifle; but if oil is plentiful

hundredfold, if there were transport enough for the oil, and a sufficient demand in Europe. When one reflects on the trouble and toil which Scotland has to exert in order to get sixty or seventy million gallons of crude oil from shale every year, it is impossible not to feel that so far as concerns the power of producing enormous quantities of cheap crude oil Scotland has not got the ghost of a chance of competing with Baku. All the advantage of the start rests, and will continue to rest, with Baku. Any attempt at competition that ignores this fact is bound to prove unsuccessful. Rivalry must be established on other grounds—by better methods of refining and a cheaper system of transport.—ST. PETERSBURG, *March 23, 1888.*

EGYPTIAN PETROLEUM FIELDS.

Colonel Stewart has recently completed and submitted to the Egyptian Government a preliminary report on the result of his researches in the petroleum district, from which it would appear that he recommends experimental borings to the north of "Jebel Tor," on the opposite side of the Gulf of Suez, where he claims to have discovered many indications that justify the conclusion that good results will eventually be obtained.

His proposals, it is understood, will be given due consideration as soon as a supplementary report, with details as to cost, etc., can be prepared and examined.

It would seem from this that, notwithstanding the many disappointments that threatened to end with failure to which the Egyptian Government has been subjected in its experiments at "Jebel Zeyt" and "Gimsah," it is nevertheless disposed to venture additional sums in prosecuting the search for petroleum in the hope of finding it in sufficient quantities to compensate it for the enormous expenditures already incurred.

It will be remembered that it was confidently hoped and maintained that oil in remunerative quantities was more than likely to be encountered at a depth of about 1,000 feet; but the limit has long since been reached, and passed by many hundred feet, and the long and much wished for expectations are yet to be realized. It seems clear that the Government, having lavishly expended—not to say wasted—extravagant sums in the development of what promised to prove a source of great revenue to its greatly depleted and needy exchequer, does not appear to be willing or feel justified in relinquishing its exertions and labors until all hope of success must be finally abandoned.

Of the presence of petroleum over a vast area there exists no longer any doubt, but whether its extraction will ever yield a proper remuneration or return is yet problematical. It is not improbable that the present generation will have to follow the example of those that preceded them thousands of years ago, who, from indelible traces left to posterity, were fully aware of

but appear to have abandoned its exploitation as

RAILWAY TUNNEL FROM LA GUAYRA TO CARACAS, VENEZUELA.

[TRANSLATION.—TRANSMITTED BY CONSUL W. S. BIRD.]

General Guzman Blanco, Envoy Extraordinary and Minister Plenipotentiary of Venezuela at various courts of Europe, on one part, and the La Guayra and Caracas Cable Company, by its attorney in matters of fact, Mr. T. W. Tyrer, on the other part, have celebrated the following contract, to wit:

ARTICLE 1. The National Government of Venezuela, by these presents, concedes to the La Guayra and Caracas Cable Company, to its successors and assigns, the exclusive right to construct, maintain and operate a cable road between the cities of Caracas and La Guayra, which shall be constructed by tunnel through the mountains directly between the two cited cities.

ART. 2. The National Government of Venezuela, by these presents, concedes to the La Guayra and Caracas Cable Company the exclusive right to construct, maintain and operate a cable road between the cities of Caracas and La Guayra for a period of ninety-nine years, and will not make a similar concession to any other company or person, nor any amendment to any existing contract that may in any way abridge the full and free enjoyment of the privileges that are hereby conceded.

ART. 3. The La Guayra and Caracas Cable Company hereby promises to construct a tunnel and cable road from Caracas to La Guayra of sufficient capacity to accommodate all the business that may be offered it, and to always maintain it in a perfect state of repair for traffic, saving and excepting every interruption that may occur on account of the breaking of machinery, obstruction of the way by inevitable causes, by insurrection, by military force or by judicial proceedings.

ART. 4. The La Guayra and Caracas Cable Company shall have the right to construct a tunnel between Caracas and La Guayra of such dimensions as may appear necessary for the full and convenient discharge of the business provided for in this contract.

ART. 5. The La Guayra and Caracas Cable Company shall have the right to construct a cartway in said tunnel for the service of vehicles, cattle, horses and all other objects for which it may be deemed proper.

ART. 6. The La Guayra and Caracas Cable Company shall have the right to collect for each person that passes over its line between Caracas and La Guayra the sum of three bolivars (57.9 cents) for each second-class seat and five bolivars (96.5 cents) for each first-class seat; and provided that a cartway is built there may be collected the sum of a half bolivar (9.65 cents) for each foot passenger over the line; two bolivars (36.6 cents) for each cart with horse or mule, and one bolivar (19.3 cents) for each donkey, cow, horse or other animal not hitched to a vehicle.

ART. 7. The La Guayra and Caracas Cable Company shall have the right to open a way of communication, to go and return, with the wharf and breakwater of La Guayra, and the right to construct depots and warehouses in La Guayra, in the locality that may be most convenient for the public, and that will assure the greatest facility for the works that may be required of it, and said cable company shall have the right of way in the city of Caracas, following the streets by which it may be necessary to extend its line as far as North avenue and Thirteenth street, and to construct in Caracas the edifices, warehouses, depots, machine shops and side-tracks that may be necessary for the best convenience of the public and of its business.

ART. 8. The La Guayra and Caracas Cable Company shall have the right to the public lands that may be situated on each side of their line to the distance of 500 meters, except within 500 meters of the seacoast, or within 50 meters from rivers, because the law forbids it. In case that the company may need a greater amount of public land

enjoy the rights conceded in the law of mines now in force to denounce them and to obtain judgment against them.

ART. 9. The La Guayra and Caracas Cable Company shall have the right to import, free of duty, all the materials, tools, machinery and other necessary articles actually employed in the construction, maintenance and service of said cable road and the depots and offices pertaining to it.

ART. 10. The payment of no national, state or municipal impost shall be demanded from the La Guayra and Caracas Cable Company for its railway property during the said period of ninety-nine years.

ART. 11. During the aforesaid period of ninety-nine years the La Guayra and Caracas Cable Company shall place its line at the service of the National Government whenever it may be demanded for the transportation of troops, materials of war, and other provisions and purposes of the Government, which service shall have preference over all other business over the line, and in compensation for said service the Government will pay to the aforesaid company the half of the fare that is at that time prescribed for the transportation of passengers and general merchandise.

ART. 12. The La Guayra and Caracas Cable Company shall begin the work of construction of said cable road within nine months, to count from the day in which this concession may have been ratified by the Government of Venezuela, in conformity with law, and thus completed, and it must finish said cable road in three years, counting from the day when the work is begun.

ART. 13. The La Guayra and Caracas Cable Company shall have the right to deposit on the seashore the stones and earth excavated in the construction of the tunnel for its railway, on the outer side of the breakwater now being built, commencing at the point of intersection of said breakwater with coast line, and extending to the north and east in such manner as not to injure the port of La Guayra, and all land thus formed by said company shall pertain to it, and may be appropriated to such purpose as the company may deem proper, and the said land shall be exempt from all taxes in the same manner as is disposed in respect to the property of the cable company.

ART. 14. This contract may be transferred to any other company or person after due notice given to the Government.

ART. 15. The doubts or controversies that may arise under this contract shall be settled according to the laws of the Republic and by its proper tribunals, in view of which the contractors will in no case have the right to international reclamation.

ART. 16. This contract, celebrated by virtue of the powers conceded by the Government to General Guzman Blanco, shall be subject to the ratification of the Government.
Made in duplicate in Paris, on December 2, 1887.

GUZMAN BLANCO.
T. W. TYRER.

UNITED STATES OF VENEZUELA, MINISTER OF PUBLIC WORKS,
DIRECTION OF WAYS OF COMMUNICATION, ACQUEDUCTS, AND ACCOUNTS,
CARACAS, *March 15, 1888.*—24 and 30.

RESOLUTION.

The President of the Republic, with the vote of the Federal Council, has thought proper to ratify in all its parts the contract celebrated in Paris, December 2, 1887, between the illustrious American, General Guzman Blanco, Envoy Extraordinary and Minister Plenipotentiary of Venezuela to various courts of Europe, by virtue of the powers with which he is invested, and Mr. T. W. Tyrer, attorney in matters of fact of the La Guayra and Caracas
that maintain and operate a cable road between Caracas and La Guayra between the

EXPORTS FROM THE CONGO STATE
DURING THE MONTHS OF JULY, AUGUST, AND SEPTEMBER, 1887.

Products.	Special commerce.		General commerce.	
	Quantity.	Value.	Quantity.	Value.
	<i>Kilograms.</i>	<i>Fr. Ct.</i>	<i>Kilograms.</i>	<i>Fr. Ct.</i>
Arachides	5,294	1,588 20	25,997	7,799 10
Coffee			319,977	479,965 50
Caoutchouc.....	8,078	28,273 00	103,544	362,404 00
Copal.....	759	1,328 25	22,020	38,535 00
Palm oil.....	363,951	163,777 95	625,797	281,608 65
Ivory.....	12,085	241,700 00	26,626	532,520 00
Palm kernels.....	1,082,217	216,443 40	1,633,474	326,694 80
Sesame.....	1,532	428 96	14,780	4,138 40
White wax.....	1,188	1,306 80	11,648	12,812 80
Raw hides.....			7,870	8,657 00
Fibers			50,116	8,519 72
Wax			26,365	55,366 50
Miscellaneous.....				20,000 09
Total.....		654,846 56		2,139,021 47

ADULTERATION OF SPANISH WINES.*

During the year ending December 31, 1887, wines shipped from this consular district to the United States were valued at \$624,037.75, and an examination of the invoices of Cadiz, Jerez, and Port St. Mary's shows that 2,470 $\frac{3}{4}$ butts, or 326,144 gallons, were invoiced at prices varying from \$55 to \$75 a butt of 132 gallons; or, excepting in the lowest instance, which was at 12 cents, from 38 to 56 cents a gallon. Of the remainder shipped to the United States 75 per cent. were invoiced under \$1 a gallon, and prices were in many cases named at \$3 to \$5 by first-class houses, who export only the higher grades to well known houses in New York and elsewhere. Old houses admit that the demand for low-priced wines compels them to yield reluctantly and compete for the market by using Berlin spirits for rectification at one-half the cost of Spanish grape alcohol, which is sold at \$125 to \$150 a butt, according to the vintage, while German alcohol (never so low as now) is selling at \$65 a butt under sharp competition and on long credit.

In 1886, 11,000 butts of the latter were imported into Cadiz, whose market for them is chiefly in Port St. Mary's, Jerez, Chiclana, Rota, Chipiona, and Sanlúcar, all wine producing towns in this province, having a total average vintage of some 75,000 butts. Wine made at Sanlúcar is not sherry, and quantities of the low wines shipped to Cete and Bordeaux are from the vineyards of Chiclana, Chipiona, and Moguer, in the adjoining province of Huelva.

The sherry district is included within the towns of Jerez and Port St. Mary's, a territory about a dozen miles square and all side have no

I have made inquiries in Cadiz, as well as in the sherry district, and although I hear rumors and partial and interested statements, and find small quantities invoiced as "Port" or "Madeira," and one lot at 12 cents a gallon, I have not been able to obtain evidence further than what appears from the invoices and the statements already made, that any shipments to the United States are adulterated, within the view of the royal order, unless the use of German spirits distilled chiefly from the potato, grains, and the beet should be considered as adulteration.

The royal decree adopts the definition that natural wines shall be considered adulterated which contain impure industrial alcohol, unless *rectified and purified*; and with the view of ascertaining the quality of that imported into Cadiz, I have made inquiries of the town chemist, whose duty it is to analyze them, and am informed that under a law of November 10th last he analyzed those already in the depot, as well as the importations since, finding only one lot that did not fulfil the conditions of purity, and which were allowed re-exportation; but he thinks that the localities most likely to import impure alcohols are those of Barcelona, Tarragona, Valencia, and Alicante. He further informs me that no other chemical laboratory exists in this province except the one at this capital, and that no steps have yet been taken under the royal order of January 30, 1888, to analyze wines manufactured and sold in the province. The governors are obliged each month to forward a résumé of what the mayors have done to the Ministerio de la Gobernacion.

As to the view taken in Jerez respecting industrial spirits for fortifying wines, the letter of its mayor (published in Consular Report No. 86, page 332) and the address of the chamber of commerce of Jerez to the Minister of State (same reports, No. 81, page 42) agree as to the deleterious qualities of German spirits and its deplorable influence on the wine trade. The former declares that their misfortunes arise chiefly from its importation and use; that the cellars are "mysterious laboratories, whose secrets no one is allowed to penetrate"; that the spurious usurps the genuine, and denominating those as "liquids" which are sold from £10 to £15 a butt. The chamber considers the absolute alcohol by every means unfit for improving and strengthening wines, and distillations from grains, potatoes, beets, and all so-called industrials containing more or less injurious substances, and that all wine should be considered adulterated that contains substances foreign to the must of the grape.

Nearly all the 11,000 butts of Berlin spirits imported yearly into Cadiz is sold chiefly in this province, which does not now produce 75,000 butts of wine a year, more than half being of Jerez. If, as is claimed, only about 4 gallons are used to a butt of wine, it is difficult to see where it all goes, especially as Spanish alcohol is also used, and Cadiz imports only about one-
brought into Spain. — CADIZ, March

SPANISH WINES.

I would remark, with regard to the wines and alcohols introduced into this city from places outside of this district, no idea can be formed there-upon as a data with regard to the amount of wines, in assimilation with those of this district, that may be used in blending after to appear and be shipped as sherry wine; inasmuch as much of those wines which enter this city from beyond its district is destined to the alembiques (stills) to be converted into spirits, which as such spirits is admissible for fortifying true sherry wines.

As regards alcohol, the amount which may be introduced into this city can not be taken as a proof of what is used for fortifying wines, inasmuch as large quantities are used in the manufacture of liqueurs, of which a number of manufactories exist in this city.

Referring to your observations with regard to the non-adulteration by use of Berlin spirits, when the decree of January 30 is complied with, I would remark that not only can those wines, invoiced at 40 and 60 cents per gallon, be considered not adulterated, but even lower-priced wines can come under that head. If the theory, as established by decree of January 30, is admitted, that the use of industrial spirits in fortifying wines does not constitute adulteration when the spirits, through having been clarified and depurated (as it is presumed all to-day are in compliance with said decree), are not injurious for consumption. Notwithstanding the foregoing, I consider all and any wine fortified with industrial spirits to be adulterated; inasmuch as such spirit not being produced from the wine—in any of its stages, either as must or wine—it is a different article from wine. The following are the definitions I find in the Spanish encyclopedia:

Falsificacion.—La alteracion de alguna cosa, hecha con animo de engañar.

Adulteracion.—Añadiendo cosas extrañas en alguna cosa.

The latter definition supports me in my assertion, that fortifying wines—no matter what wines they may be—with industrial spirits constitutes adulteration; albeit such spirits, when clarified and depurated, may not be considered injurious to the health. Although under the opinion of chemical authority the analysis shows the basis of all alcohols or spirits to be of the same chemical components, the point can not be refuted that spirits produced by burning must or wine and industrial spirits are not conscientiously the same thing. If in all senses they are the same, why are the consequences produced by using wine fortified with spirits, produced from, or as a product of the grape, and the use of wine fortified with other spirits so different?

No action has been taken by the Chamber of Commerce, or the Association of Shippers, of this city with regard to the Spanish decree of January 30, inasmuch as it is considered to be not beneficial to the wine trade if complied with. Regarding the recent order of

order completely ruin the Spanish wine trade in its export to France, but that said order constitutes a direct violation of the Franco-Spanish treaty *in re* wines for importation into France. In a day or two the Chamber of Commerce of this city will meet to discuss petitioning the Spanish Government to protest against the order in question of the French Government. The object of the French Government is clearly obvious, it simply being a protectionist act in support of the Algerian spirits. The tenor of the order, or its interpretation by the French customs, is such as to make it impossible for wines shipped, fortified from the Spanish, to compete with those fortified with the Algerian spirits. By said order the Spanish wines are either qualified by their alcoholic strength as pure alcohol, and so subjected to be imported into France under the extremely high alcohol tariff, by which competency on their part is not possible, or they are denounced as unfit for use as a beverage. With regard to what artificial or chemical matter may be used as coloring in the preparation of wines, I am completely ignorant, and where such is employed it is undoubtedly a complete secret with the preparer.

Without doubt where falsification, *bona fide*, of wines sent out from this city as sherry wines takes place, it is principally with those for consumption in Spain. From my own experience I can frankly say that it is my firm belief that other than where the fortifying wines with Berlin spirits can be considered as adulteration, no falsification or adulteration *bona fide* is practiced with wines exported to the United States and Great Britain. In answer to your question regarding the laboratory that should exist in this city in compliance with decree of Spanish Government, I would submit for your persual the enclosed communication of the mayor of this city in answer to my inquiries on the subject.

From other and good authority I am informed that the instructions of the decree of January 30 are strictly adhered to by the local authorities of this city. Although it is presumed the Berlin spirits are analyzed at port of entry, those arriving at this city are examined and analyzed. Besides official visits are made—*impromptu*—to liquor-selling establishments, and samples of the articles obtained are analyzed.

Considering they may interest you, as referring to the wine trade of this district, I would mention the following particulars: The vintage of 1886 produced from 50,000 to 60,000 butts of must, and that of last year was very little less. The vineyards produced last year more or less must, as follows: Arenas, about 80,000 arrobes; and Afueras, 100,000 arrobes. The proportion of must produced last year was, as an average, Arena vineyards, 4 butts per arransada; Afueras, fully 3.

The average alcoholic strength of last year's must was $13\frac{1}{2}$ degrees, and

[TRANSLATION.]

Letter of the Mayor of Jerez on the establishment of a chemical laboratory for analyzing alcohols and wines.

In reply to your note of the 20th instant, I would inform you that in order to comply with the rigorous rules last made by the Ministry of the Government, there has been established in this city, at municipal expense, a chemical laboratory for analyzing alimentary substances, and more especially industrial alcohols.

As the said Ministry has, by virtue of a Royal decree, declared that it is the province of the Mayor to have examined goods intended for public consumption entirely independent of the custom-house laboratories, and would further inform you that this laboratory analyzes and will analyze industrial spirits which are brought in, and will energetically repress the introduction of alcohols noxious to health, and other adulterated or poisonous substances.—JEREZ, *March 22, 1888.*

E. FREYNE,
Mayor ad int.

PORK IN DENMARK.

Two orders, relating to the transportation and exportation of hogs, have recently been issued by the Danish Government and published in the papers here. The first of these, issued March 10, is as follows:

The Minister of the Interior's order, of November 25, 1887, relative to the prohibition of the sale or other exchange of hogs or pigs at fairs or on market days, as well as the said Minister's order of November 29, 1887, relative to prohibition of the transportation of live hogs or pigs between the various parts of the country, are hereby repealed so far as Jutland, Funen, together with their adjoining islands—Samsø included—and Bornholm are concerned. On the other hand, the orders named remain in force as regards Sealand and Lolland-Falster, together with their adjoining islands, until further notice. In accordance herewith the inter-district transportation of hogs and pigs among the districts first named, as well as the transportation of same from these districts to Sealand and Lolland-Falster, together with their adjoining islands, is for the future allowed, while all inter-transportation of hogs and pigs between Sealand and Lolland-Falster, together with their adjoining islands, as well as all transportation from these districts to other parts of the country, is still prohibited until further notice.

The second order, issued March 13, 1888, provides that:

The prohibition of the transportation of hogs and pigs from Sealand and Lolland-Falster to other parts of the country, as contained in the Minister of the Interior's order of November 29, 1887, and repeated in the order of March 10, 1888, shall not be construed as prohibiting the transportation through other parts of the country of such hogs, from Sealand and Lolland-Falster with the adjoining islands, as are intended for exportation via Esbjerg, providing such transportation take place under the following conditions, viz:

1. The transportation to take place either direct by railway to Esbjerg, or by steamer to Kolding, and thence by railway to Esbjerg.
2. The hogs under way not to be unloaded from the cars or steamers in which they are transported.
3. No other hogs, intended for unloading at any station on the route, to be loaded upon the same cars or steamers together with the hogs designed for exportation; and
4. The cars and steamers used in the transportation to be disinfected in the usual manner before being used as transports for other hogs.

transportation through the country of hogs from the Sealand and Lolland-Falster districts intended for export to other countries (viz. England). As the English markets are closed against Danish pork and its products, I can only explain this phenomenon by the inference that living hogs are allowed to be landed in that country, but are inspected and slaughtered on the spot, an explanation which is supported by the advertisement of a large steamship company of this city to the effect that living hogs will be received for transportation to Hull and stating the animals, "according to English law," will be subject to slaughter at the place of landing. — COPENHAGEN, DENMARK, *March 15, 1888.*

R. B. ANDERSON,
Consul-General.

PORTUGUESE INFLUENCE IN AFRICA.

An expedition of land and sea forces under the command of Señor Joan Antonio de Brissac das Neves Ferreira, Captain of Frigates, Governor of Congo, has taken military occupation in the name of the King of Portugal of a tract of land north of Loando and Ambriz, in the neighborhood of parallel 7 degrees south and known as Ambrizette.

Though the strong natural limit of Angola, *i. e.*, as regards climate, fauna and ethnology is from the Congo River to Cape Frio, yet the country occupied by the Portuguese, until this later addition, was only from Ambriz to Mossamedes.

The natives inhabiting this part of the coast are called "Mussurongos." The natural effect of the slave trade was to encourage them into indolence, but since all hope of it being again established has passed away, the development of produce in this district and from the interior has been great, and promises to become much greater and very important in amount. At present most of the produce comes from the interior. The system of trade differs from that of other points, and is complicated and curious. All produce, except ivory, on being brought to the trader is weighed and price agreed in English "longs" or Portuguese "pecas." The peca or long is the unit of exchange to which all articles of barter are referred. For instance, 3,000 blue glass beads, 6 yards common cotton cloth, etc., are equal to a long or peca, articles of greater value are more longs each.

Being unwise to allow the natives to enter the factories, the buyer gives the seller a paper with the number of longs or pecas written on it, which the holder presents at a window of the store when he receives its value in goods. It can be imagined what shouting and noise there must be when hundreds are gathered before one window each clamoring to be paid first; but practice

Several mineral deposits of more or less value are known the most important are, one of mineral pitch and another of malachite, but the natives, through fear of annexation, have made these deposits "fetish," and as they are reached via the beautiful Ambrizette River, unfortunately navigable only by canoes, the natives allow no white men to go further toward its source than a few miles.

This expression of the policy of the Portuguese is in accord with their many efforts to promote the interests of the province giving them an added influence in the Congo and making Angola more interesting to the commercial world.

HENRY F. DOWNING,
Consul.

RAILROADS IN VENEZUELA.

On the 16th ultimo the railroad between this port and Valencia was formally opened by President Hermogenes Lopez.

The Puerto Cabello and Valencia Railroad, as it is called, was commenced a little more than two years ago by Perry, Caruthers & Co., of London, contractors. On the 1st of April it will pass into the hands of the company, of which Mr. W. Mallon is general manager. The gauge is 3 feet 6 inches—6 inches wider than the track between Laguayra and Caracas.

The distance is 54 kilometers. Valencia, the southern terminus, is a city of some 40,000 people, and is situated in the heart of one of the richest agricultural regions in the country. In fact, it is admitted that the States of Carabobo and Lara are the first in agricultural development in the entire republic. Another railway, from Caracas to Valencia, about 300 kilometers in length, is in process of construction by an English company. It is reported that Krupp, of Krupp gun fame, has a concession for still another railway between the two cities mentioned above.

Another railway is projected between this port and Aurare, which is not far from the Apure River, one of the principal tributaries of the Orinoco on the north. This is also about 300 kilometers in length.

There is still another line of railway—already commenced—in this consular district, extending from La Luz to Barquisimeto, a distance of 85 kilometers.

These lines will open up a great agricultural and mineral district, facilitating greatly the movement of merchandise to this port, and will doubtless build up and develop the country's resources more largely, and materially improve and advance the interests of the people throughout the entire country, and will be the best means of placing the government on a much more stable basis than it has ever had.—PUERTO CABELLO, *March 15, 1888.*

NORWEGIAN HERRING FISHERIES.

The winter's herring catch, which commenced in the middle of January, is now finished and the fishing hands are returning home. According to the official report, the whole return of this season only amounts to 61,000 barrels, valued at 222,000 crowns, against a catch in 1887 of 175,000 barrels, worth 325,000 crowns, and is the smallest one for the last six years. The principal cause for this decline is generally attributed to the unfavorable, very frosty weather, and partly to the very decreased number of fishing hands collected at the banks. The greater part of the herring caught early in the season, about 35,000 barrels, was all cured, but after the close of the catch on the Swedish coast, the principal quantity was exported fresh on ice and also smoked mostly to England, and small lots to Belgium, Holland, and Hamburg. During the latter part of the season the size was small and not suitable for curing. It was fortunate to have the English markets so near at hand for the sale of the fresh and smoked article.

The prices, to the great satisfaction of the producers, advanced during the season from 4 to 7 crowns per barrel, and the shipments have given to the merchant as well as exporters a satisfactory profit. During the two last years the mode of treatment of the article has been more careful, and on the whole improving, and the six large establishments for smoking herring, near Hauge-sund, have been busily engaged during the whole season for the English market, where the article has brought good prices. — BERGEN, *March 22, 1888.*

F. G. GADE,
Consul.

INDUSTRIES OF MORRISBURG, ONTARIO.

This consular district comprises the united counties of Dundas, Stormont, and Glengarry, embracing an area of 777,347 acres of fertile and productive land. Ninety-three cheese and a number of butter factories are established within its limits, the products of which go to Liverpool. The chief exports to the United States are eggs, sheep and lambs, barley, hay, hides, cattle, and horses, the latter in large quantities, there being a great diversity of blood, style, and some of which is very superior stock. The village of Morrisburg, in which this commercial agency is established, contains two thousand inhabitants, being pleasantly situated on the northern bank of the St. Lawrence River. It has also a few small mills and shops which give employment to about one hundred and twenty-five persons. A daily steam ferry between here and Waddington, in the State of New York, facilitates business and travel. With one exception it is the only steam winter ferry on the St. Lawrence River. The inhabitants are well to do, and usually treat Americans with great kindness and respect. Cornwall, a consular agency under this commercial agency, is a flourishing manufacturing village, containing a population of seven thousand, and is also situated on the bank of the St. Lawrence River, 28 miles east of Morrisburg. It contains two cotton mills, one woolen mill, which give employment to fifteen hundred hands, and also several smaller mills. There are located

Emigration.—Eighty-six persons, many of whom had families, emigrated from here to the United States during the past year.

Exports.—The exports from this district to the United States for the year ending December 31, 1887, are as follows:

	Value.		Value.
Ashes	\$99.00	Machinery	\$50.00
Barley.....	2,906.69	Miscellaneous.....	382.55
Beans	1,753.28	Musical instruments.....	30.00
Cattle	1,389.50	Oats.....	225.12
Dressed poultry.....	911.20	Personal and household effects.....	21,013.90
Eggs	181,795.93	Railroad ties.....	1,250.00
Hay.....	8,722.98	Sheep and lambs.....	37,127.02
Horses	75,214.00	Swine	38.00
Hides and skins.....	8,225.46	Woolen cloth.....	1,520.71
Live poultry	257.53		
Lumber.....	4,069.97	Total.....	346,982.84

The chief imports from the United States to this consular district are coal and petroleum. The following are the imports for the year ending December 31, 1887:

13,855 tons anthracite coal.....	\$64,357.00
1,706 tons bituminous coal	6,530.00
65,976 gallons kerosene.....	5,595.00
Total.....	75,482.00

Even at a considerable advance in price American petroleum is preferred by consumers; the quality being better, it being free from smoke and the disagreeable odor that accompanies the Canadian oil. The quality imported is what is commercially known as 150° prime white. If the American refiners would push the sale of oil in Canada they could greatly increase their sales.—MORRISBURG, ONTARIO, *January 24, 1888.*

SELLAR LEISHMAN,
Commercial Agent.

MANUFACTURE OF CHINA IN LIMOGES.

China is selling at a lower rate now than it has been for many years in Limoges, the reasons being that the price of labor has decreased 10 per cent. in the last five years; machinery has in many instances replaced hand-labor; and one class of workmen, the saucer-makers, has entirely disappeared since the strike of 1883. The rates of interest and insurance greatly favor the manufacturer. The price of coal and wood is lower than in previous years, the former costs from 25 to 35 francs per ton, delivered at the factory; the price for the latter is from 10 to 12 francs a stère, which is about one-third of a cord. The year 1887 shows a decided increase in the production of china; there was a steady decline from 1882 to 1886. The following table, carefully compiled, shows the decline and rise in the manufacture of china at Limoges and vicinity since 1882, which gives 1,945 furnaces, *i. e.* the number of firings or baking in 1887, against 1,851 for 1886, when the minimum was reached. The increase last year was nearly 100 furnaces, amounting to half a million francs.

Year.	Coal furnaces.	Wood furnaces.	Total.
1882.....	2,599	507	3,106
1883.....	2,239	544	2,783
1884.....	1,895	448	2,343
1885.....	1,660	448	2,108
1886.....	1,851	448	2,299
1887.....	1,945	448	2,393

From these statistics it will be noticed that some manufacturers burn wood, although it is more expensive than coal. The reason of this is, that they think the sulphurous fumes from the coal injure the color of the china. Few colors have yet been discovered that will resist the gases of coal, so wood is used exclusively to heat the "*moufles*," the furnaces where the paintings are fired. Limoges china is in demand all over the world, but by far the greatest share goes to the United States. The production last year amounted to over 8,000,000 francs, nearly one-half of which was exported to our country. Freight charges are, from Limoges to the United States, from 83 to 120 francs per ton. The exporters as a rule speak hopefully of business and report better prospects this year than they have for a number of years.—LIMOGES, FRANCE, *March 5, 1888.*

WALTER T. GRIFFIN,
Commercial Agent.

EMIGRATION FROM AND IMMIGRATION INTO THE UNITED KINGDOM IN 1887-

[REPORT OF MR. GIFFEN.]

In presenting the accompanying tables relating to emigration and immigration from and into the United Kingdom during the year 1887, I desire, as in former years, to call attention to the general features of this movement, so far as they are disclosed by the returns collected by this department. In view, however, of the attention which has lately been directed to European immigration into this country, it is perhaps desirable to again point out that no information on this subject is contained in the following tables, which relate solely to the movement of passengers between the United Kingdom and places out of Europe and not bordering on the Mediterranean.

Examining first, then, the *gross* amount of such emigration, it appears that the expansion in volume of this outward current which occurred in 1886, as compared with 1885, has been continued during the year just ended, the numerical increase being very nearly the same. The figures are:

Emigration in 1885, 1886, and 1887.

	Total, including foreigners.	Emigrants of British and Irish origin only.
Number of emigrants in 1887.....	396,494	281,487
“ “ “ “ 1886.....	330,801	232,900
“ “ “ “ 1885.....	264,385	207,644
Increase in 1887.....	65,693	48,587
“ “ 1886.....	66,416	25,256

As will, however, appear from this table, the expansion of *total* emigration, though considerable, has proceeded at a diminished rate, the figures for 1887 showing an increase of rather less than 20 per cent. over the numbers given for the previous year, while the 1886 figures represent an increase of about 25 per cent. over 1885.

In 1886 the increase in the number of emigrants was especially marked in the case of those of foreign origin, while in 1887 it occurred chiefly among the British and Irish emigrants, the numbers of these rising from 232,900 in 1886 to 281,487 last year, an increase of nearly 21 per cent., as against 12 per cent. only in 1886. The total number of foreigners who emigrated from the United Kingdom in 1887 was 108,572, as against 64,270 in 1886, an increase

when the number was 320,118. Taking the population of the United Kingdom at the middle of 1887 as 37,091,564 (according to the estimate of the registrar general), the proportion of emigration (of British and Irish) thereto was for that year .76 per cent., a higher rate than that of any previous year since 1854, except the year 1882, when it was .79 per cent., and the year 1883, when it was .90 per cent.

Of the *gross* number of passengers from the United Kingdom (hitherto dealt with) many are, of course, not emigrants in the proper sense of the word, but travelers on business or pleasure. The great majority of cabin passengers no doubt belong to the latter class, and some idea of the proportion borne by such travelers to the emigrants, strictly so called, and of the development in recent years of this passenger movement, may be gathered from the following statement:

Number of cabin and steerage passengers leaving the United Kingdom for places out of Europe in each of the years from 1876 to 1887, inclusive.

Years.	Cabin Passengers.	Steerage Passengers.	Total.
1876.....	41,900	96,322	138,222
1877.....	37,147	82,824	119,971
1878.....	43,168	104,495	147,663
1879.....	43,928	173,235	217,163
1880.....	50,734	281,560	332,294
1881.....	54,270	338,244	392,514
1882.....	56,739	356,547	413,288
1883.....	55,840	341,317	397,157
1884.....	57,403	246,498	303,901
1885.....	51,428	212,957	264,385
1886.....	59,382	271,419	330,801
1887.....	60,754	335,740	396,494

From these figures it appears that the number of cabin passengers is, in the main, steadily increasing, and is not liable to the fluctuations noticeable in the numbers of steerage passengers.

Some small part of the emigration from the United Kingdom to the United States has of late years been effected by way of the continental ports—Antwerp, Rotterdam, and Amsterdam—and of such passengers no account is taken in the appended set of tables. The figures for last year are subjoined, and may be compared with similar figures in previous reports. It will be seen that emigration by this indirect route is small, and shows no tendency to increase.

Emigration from the United Kingdom to the United States in 1887 via continental ports.

Nationality.	Married males.	Married females.	Single males.	Single females.	Males under 12 years of age.	Females under 12 years of age.	Total males.	Total females.
English.....	449	273	700	150	148	169	1,297	592
Scotch.....	35	16	38	19	4	18	77	53
Irish.....	25	23	28	22	11	27	64	72
Total.....	509	312	766	191	163	214	1,438	717
Foreigners.....	277	161	446	138	74	99	797	398
Grand total.....	786	473	1,212	329	237	313	2,235	1,115
Corresponding figures for 1886:								
Total British and Irish.....	407	311	1,027	229	145	173	1,579	713
Foreigners.....								

The return current of immigration falls next to be considered. The total amount of immigration is seen from the following table:

Immigration in 1885, 1886, and 1887.

	Total, including foreigners.	Immigrants of British and Irish origin only.
Number of immigrants in 1887	119,013	85,475
“ “ “ “ 1886	108,879	80,018
“ “ “ “ 1885	113,549	85,468
Increase in 1887	10,134	5,457
Decrease in 1886	4,670	5,450

This shows an increase in number both of foreign and of British immigrants in place of the decrease noticeable last year. This increase in immigration, coupled with a continued increase in emigration, is in exact accord with the rule to which attention has been called in previous reports: “An increase of immigration accompanies generally an increase of emigration, and reaches its maximum in those years when the emigration begins to fall off from the maximum it has itself reached, and then in the succeeding years emigration and immigration both decline; the minimum, however, in the case of emigration preceding the minimum in the case of immigration, which, as a rule, occurs in the first year after the emigration, having declined, begins again to increase.”

The importance of a record of immigration is obvious, as, in order to properly estimate the extent to which a transfer of population takes place in any year from the United Kingdom to other countries, the number of immigrants should, of course, be deducted from the gross number of emigrants. The *net* emigration for the last three years, as thus calculated, is seen from the following table:

Excess of emigrants.

	Total number of passengers.	Passengers of British and Irish origin only.
Number of emigrants in 1887	396,494	281,487
“ “ immigrants “	119,013	85,475
Excess of emigrants in 1887	277,481	196,012
Corresponding excess in 1886	221,922	152,882
“ “ “ 1885	150,836	122,17.

The *total* surplus emigration (*i. e.*, including foreigners) has thus again increased during 1887, though not to the extent observable in 1886, when the effect on the balance of population of an increase of emigration over 1885 was enhanced by a simultaneous small decline of immigration. On the other hand, the net emigration of persons of British and Irish origin only has increased even more than in 1886, the 1887 figures representing an advance of 28 per cent. over those for 1886, while these again showed an advance of 25 per cent. over the numbers returned for 1885. The proportion of *net* British and Irish emigration to the total estimated population of the United Kingdom at the middle of the year was (for 1887) .53 per cent., as compared with .42 per cent. in 1886, and .34 per cent. in 1885, which was the last

To the *gross* British and Irish emigration the Irish, in 1887, contributed 28 per cent., a proportion slightly greater than that of the preceding year, but still below the average proportion for the last three quinquennial periods—1871-'75, 1876-'80, 1881-'85—and far below the high rate observable in the years preceding 1869-'70. Scotch emigrants maintain about the same proportion as in former years, viz., 12 per cent., leaving 60 per cent. to be accounted for by the English emigrants.

By far the greater number of emigrants still select the United States as their country of destination, the proportion going thither of the total number of British and Irish emigrants being 72 per cent. in 1887, as against 66 per cent. in 1886; 34,183 (12 per cent.) went to the Australasian colonies, as against 43,076 (or 18 per cent.) in the previous year; while 32,025 (or 11 per cent.) proceeded to British North America, the proportion being unchanged from that of 1886, though the number is higher by 7,280. Taking English emigrants separately, the proportion going to the United States in 1887 was 63.6 per cent.; to British North America, 14.6; and to Australasia, 14.9; while of Irish emigrants no less than 87.6 per cent. were bound for the States. During the thirty-five years from 1853 to 1887, neglecting the return current of immigration, of which for the early part of this period there is no account, nearly 4,250,000 persons of British and Irish origin have left the United Kingdom for the United States, 2,165,532 of these being Irish. Some idea of the effect which this movement from our shores still exerts on the population of the United States, Canada, and the Australasian colonies may be gathered from the following table, compiled from the census tables of each of the countries named on the left-hand side of the table, in which the figures relate to the census year 1881, or, in the case of the United States, 1880.

Number of persons born in the United Kingdom forming part of the population of the countries named, and proportion of such persons to the total population of those countries.

Country.	Population.	Born in England.	Born in Scotland.	Born in Ireland.	Total born in the United Kingdom.	Percentage born in the United Kingdom.
United States.....	50,155,783	747,462	170,136	1,854,571	2,772,169	5.5
Canada.....	4,324,810	169,504	115,062	185,526	470,092	10.9
Australasia :						
New South Wales.....	751,468	110,674	25,079	69,192	204,945	27.3
Victoria	862,346	147,453	48,153	86,733	282,339	32.7
South Australia.....	286,211	59,151	10,637	18,246	88,034	30.8
Queensland.....	213,525	37,390	9,929	27,295	75,614	35.4
Western Australia.....	32,054	6,760	732	2,975	10,467	32.6
Tasmania.....	115,705	17,307	3,744	7,192	28,243	24.4
New Zealand	534,030	121,387	52,753	49,363	223,303	41.8

To these figures it may be added that the total German born population of the United States at the census of 1880 was returned as 1,966,742, or 3.92 per cent. of the total population, a proportion slightly higher than that of the inhabitants of Irish origin, who formed 3.70 of the population. It may assist in realizing the meaning of these figures to remember that the total number of foreign-born residents in the United Kingdom at the last census was only 135,640, or rather less than .39 per cent. of the population. This is not the place to trace the manner in which the foreign element distributes itself over the United States, as to which some interesting particulars are contained in the census tables for that country; it may, however, be mentioned that of the total population of the State of New York, numbering 5,082,871, no less than 1,211,379, or nearly one-fourth, are returned as foreign born, while even this proportion is exceeded in the States

In the city of New York itself, out of a total population in 1880 of 1,206,299, there were 237,935 returned as born in the British Isles, viz., 30,657 in England, 8,683 in Scotland, and 198,595 in Ireland—the Irish element thus amounting to 16.5 per cent. of the population of the city.

The decrease in emigration to Australia noticeable in 1887 is no doubt to be attributed in part to the reports which have reached England of the overstocking of the labor market. It has also to be remembered that free passages are at present not granted to any of these colonies except Queensland, and that assisted passages are only granted to Queensland, West Australia, and New Zealand, and these under strict limitations. It has frequently been noticed in former reports that emigration to Australia has been largely an assisted emigration, and has risen or fallen as assistance has been given or withheld.

The general increase in emigration, and especially the increase in emigration to the United States, may no doubt be considered as an additional sign of the revival of trade. As has been pointed out in previous reports, there is an oscillation in the amount of annual emigration broadly corresponding to variations in general trade prospects, and particularly to such variations in the countries of destination. Emigration rises or falls as trade is brisk or dull. The last minimum point was reached in 1885, and in the last two years there has been a marked expansion in emigration. There are signs of the revival of trade being likely to make progress for some time to come, and it remains to be seen whether this hope will be realized and whether a continued development of emigration will take place in the current year.

A few years ago, in consequence of the interest in the question as to the operation of the immigration laws of the United States regarding pauper aliens, the board of trade requested their principal officers at the different ports to obtain returns from the shipowners of the number of emigrants rejected by the United States authorities and sent back to the United Kingdom on the ground that they were likely to become public charges. During the last two years the returns thus obtained are believed to have been complete, and the general results are shown in the following table:

Number of emigrants who were rejected by the United States authorities and sent back to the United Kingdom during the years 1886 and 1887.

Nationality.	Adult males.	Adult females.	Male children.	Female children.	Total males.	Total females.	Total.
1886.							
British and Irish	27	43	4	5	31	48	79
Foreigners	37	29	15	10	52	39	91
Total.....	64	72	19	15	83	87	170
1887.							
British and Irish	32	29	9	10	41	39	80
Foreigners	5	7	3	3	8	10	18
Total.....	37	36	12	13	49	49	98

From this it appears that the number of emigrants rejected and returned in 1886 was 170, and in 1887 the number was 98. The number of British and Irish included was in each year about the same, viz., 79 in 1886, and 80 in 1887, while the number of foreigners included

THE DANISH BUTTER MARKETS.

The unfavorable conditions of the dairy drift, fully as much as the low prices of grain, have been weighing heavily on Danish agriculture. The milk production in the past year, speaking comparatively, has been of an unsatisfactory character, mainly on account of the long duration of general lack of pasturage, caused by the unusually long drought. Butter prices have been bad—lower, indeed, for a time than had been experienced for many years; and swine, which make a large share in promoting dairy profits, have also been a source of great disappointment, more especially towards the close of the year, when the plague of swine fever first made its appearance. On the other hand, prices of flour, which now play a very prominent part in all dairies, have ruled low throughout the year; and milk, excepting in the scant grazing season, has been produced relatively at smaller cost, so that the poor butter prices have been made more endurable than when butter had to be produced at former prices. Thanks, also, to the large number of union dairies which were established in the course of last year, many of the small proprietors, notwithstanding the dull butter prices, have been enabled to obtain better returns from their cow keeping than had been known to them in previous years. The steady increase in the kingdom's butter exports may also be said to be due to these dairies.

PRICES.

The year 1887 opened the same as in 1886, with a price of \$27.87 per 100 pounds Danish weight (110½ pounds American weight) for best export butter, but at the close of January prices had declined considerably, so that up to the first two weeks in February it stood at only \$24.12. It shortly advanced again, maintaining during five weeks in February and March the price of \$26.26. At the close of March a decline again set in, and prices receded week by week until the close of May, when the minimum point was reached of \$18.76, remaining at this low figure during two weeks. In June an advance commenced, only by small steps, but continuing steadily, without any retrogressive movement, until prices in the beginning of the month of October attained the maximum point of \$28.94. During five weeks it was enabled to maintain this position, when a decline again took place, and the year closed with the price of \$26.26—\$1.61 below that of the year's commencement. In comparison with 1886 the last year will be found to have stood 54 cents lower both in maximum and minimum prices; but taking an average, it is seen to have been almost exactly the same in both years, viz., \$25.32.

For the purpose of comparison with the average prices of best export butter during the year 1886, the following table is given:

1887	\$25 32	1879	\$27 34
1886	25 19	1878	30 28
1885	26 80	1877	31 90
1884	29 20	1876	34 04
1883	30 02	1875	31 90
1882	31 36	1874	32 96
1881	32 16	1873	29 75
1880	31 36	1872	27 34

The average price for these sixteen years is thus seen to have been about \$30.10, or \$4.78 above that of last year, and in one of these years was about \$8.70 higher than in the year 1887.

The prices for ordinary and best export butter during last year have kept their relative positions fairly well, although the good advance in the late summer months and in the autumn was not equally obtained by the ordinary class; and while the price difference between the two classes in the months of April-June was, as a rule, no more than an average of \$2.70, this in the autumn amounted to an average of \$7.50. The average price for ordinary butter for the entire year was \$20.10, or \$5.22 below that for export butter. The highest price obtained for the ordinary class was \$21.98 (during five weeks), and the lowest \$16.08 (for two weeks), a difference of \$5.90. It may also be mentioned that the poorer the quality of the butter, so much fewer variations in the price has it been subjected to. Only in the months of April and May were any changes of price to be noted for this poorer grade of butter, the remaining months of the year showing no change worth mentioning. The highest price obtained in the year for this class was \$16.08, and the lowest \$13.40, so that the difference during the whole course of the year was only \$2.68. This description of butter has also been paid somewhat better than in the year 1886, when it never reached higher than \$15, and for several months was not above \$10.72. The average price for 1887 was \$14.47, or \$2 above that of 1886, and in the latest preceding years the average price for this poorest grade of butter may be said to have fluctuated between the figures \$17.15 and \$14.34.

On the 1st of January of the present year the new margarine law went into force in England. There are thus good grounds of hope that this may be the means of creating a more lively demand, together with a tendency to higher prices, for export butter, even though there may be no great prospects of such good prices as were known in the middle of the seventh decade of this century. The fate which may attend the Artificial Butter bill in the Danish chambers will also doubtless exert much influence on the future position of Danish butter in the English markets. In every case, indefatigable attention and persevering work with respect to the quality and uniformity of the butter will be found absolutely necessary to enable Danish butter to retain

TRICHINOSIS IN SAXONY.

The Saxon Landtag has passed a law making microscopical examination of swine and swine's flesh compulsory, with a view to preventing the spread of trichinæ and trichinosis. The number of deaths from the latter disease in Saxony has been larger during the past winter than for a long time previously. Cunewalde, a small town near Dresden, has suffered the most. Quite a number of deaths have occurred, the exact number I am unable to say, and about one hundred persons are still sick with the disease. The relief committee report that they have thus far received cash contributions amounting to 39,000 marks, and they expect to relieve all distress with the sum on hand. They say they require 2,000 marks weekly. — ANNABERG, SAXONY, *March 29, 1888.*

GEORGE B. GOODWIN,
Consul.

AFFAIRS IN MEXICO.

[MESSAGE OF PRESIDENT DIAZ. — TRANSLATION.]

Messrs. Deputies — Messrs. Senators :

Upon meeting you on this, the occasion of the closing sessions of this present Congress, it gratifies me to advise you that complete peace prevails through all the confines of the Republic ; and now, in compliance with the duty assigned to me under the constitution, I proceed to give you an account of the condition of public affairs of the country. Our relations with foreign countries continue upon a basis of perfect harmony, and each day finds the links binding us to them drawn closer and closer.

As I announced in my last message, we are waiting for the American Congress to authorize the expenditures by the commission which, in accord with our own, is to re-locate the boundary-marks dividing the two countries. In connection with the provisions of the treaty in force between Mexico and her neighbor on the north touching the change of channel-course of the Rio Bravo, investigations have been set on foot designed to obviate all future difficulties from that source ; and due presentation will be made of all measures necessary to guarantee the perpetuation of national interests.

Toward the close of last February our territory was entered by three police officers of the Territory of Arizona, who came over armed, and accompanied by two Pápago Indians, all in pursuit of American banditti. They were all disarmed in Janos and at once set at liberty, it being agreed that their arms should be placed at the disposition of the United States Government. On the other hand, a lamentable occurrence happened lately at Paso de Aguila. An officer, a sergeant, and two soldiers, belonging to the garrison at Piedras Negras, passed over to American territory in pursuit of a deserter. Opposition being made by the

gated by our military authorities, to the end that condign punishment be visited upon those who are proven to be responsible for that scandalous act, which so much resembled the late occurrence at Nogales, passed upon in a manner so justly severe by our military courts.

For the purpose of arranging, as best adapted to the interests of good vicinage, the pending claims of Mexicans against Guatemala, and of Guatemalan citizens against Mexico, a convention has been signed in the capital, which is to be submitted to the approval of the Senate, and which provides for the appointment of a mixed commission charged with the settlement of those claims. Another convention is to be also submitted to the Senate, providing for the reciprocal introduction, free of all duty, of the national products of both countries.

Our legation in Central America, after having visited the Republics of Salvador, Nicaragua, and Costa Rica, in which places it was received with marks of esteem very flattering to our country, returned to its place of fixed residence, Guatemala.

The executive, understanding the advantages which the Republic would obtain by the extension of its commercial relations with the Chinese and Japanese Empires, and in view of the favorable advances made by the latter lately, has instructed our minister at Washington to treat with the Representatives at that capital of the said Emperor, and negotiate a treaty of friendship, commerce, and navigation with each of them.

The treaty made with the Plenipotentiary of France on November 27, 1886, has been ratified by the French Government, and the exchange of ratifications will soon be effected in this city.

By invitation of the Belgian Government, the Mexican Minister, accredited to that kingdom, has been authorized as delegate to Mexico, to participate in the International Conference at Brussels, designed to secure the publication of the customs tariffs of the several nations composing the conference.

The executive continues to devote its efforts toward the maintenance of public peace and well-being and the preservation of the best harmony between all the general and local powers of the nation, elements indispensable to the country in the path of moral and material progress into which it has passed.

No difficulty has surrounded the elections in the States of Chiapas and Sonora, held in pursuance with the provisions of their respective constitutions. The decree issued by Congress forming two districts in the territory of lower California, to depend directly upon the federal executive, has commenced to become operative with great success in both cases, and principally to the northern district, which, as is known, acquires increasing importance

territory. The executive is proceeding with the greatest care, and his efforts are happily seconded by the boards of health of the ports in all cases in which suspicious ships and cargo appear, when they prohibited communication with, or discharge from, the said vessel, save upon presentation of the circulars relative thereto, and always, when necessary, after due consultation with the superior board of health.

The proposed sanitary code is included. Its final adoption, however, has been postponed for the purpose of amending it in some points, in the light of new suggestions made by the president of the council, who, a few months since, went to Europe to study various matters appertaining to public hygiene. His investigations will doubtless give new life to the council and encourage its labors on the microbiological laboratory set up by the board.

In furtherance of the proposed improvements in the postal service, as far as circumstances would permit, 18 new post-offices have been established, also 50 agencies and 58 stations, which will bring together places hitherto of medium importance which have lain outside the circle of postal communication and shut off from all mail communication with the rest of the country.

Following up the plan adopted to establish daily communication between the capital of the Republic and the exchange offices abroad, situated on our frontier and maritime points, daily mails were put on during the past month to Acapulco, Tepic, and Colima, and very soon like service will be established between this capital and the port of Mazatlan.

The Central and International railroads having united at the hacienda called "Torreon," it became necessary to change the entire postal system in the States of Nuevo Leon and Coahuila. In due time orders were issued for the opening of postal agencies, offices and of mail cars, and the carrying of the correspondence between the respective stations and the towns situated beyond the lines was arranged for, so that as soon as the branch from Torreon to Piedras Negras was opened on the 1st of March last the postal service began to operate regularly under a new combination.

Foreseeing that, at no far distant day, the office at Nuevo Laredo would acquire decided importance, a building was purchased there and work begun to adapt the same to the needs of the postal service.

The measures heretofore adopted in this branch have produced favorable results, for mail movement has rapidly increased. In my message of September 16th last I stated that, according to the data up to that time collected, during the year closing in June more than 18,000,000 pieces had circulated through the Mexican postal service. It is now necessary to modify those data, and to state that the real total of pieces thus circulating during the year referred to approached 24,000,000.

The receipts have correspondingly increased, and it can be safely stated that by the

It being considered opportune to introduce into our mail service the system of domestic postal drafts in connection with our mail communication with other countries, the due measures are being taken therefor.

The regulations for the execution of the convention of April 4, 1887, between Mexico and the United States were duly issued, and a notable increase has ensued in the traffic in packages of merchandise between the two countries, and it will be further extended by virtue of the treaty now under consideration for the increase of postal facilities. In view of this successful experience another treaty is being arranged between this Government and Great Britain.

The contract term for the service of the Pacific Mail steamers having expired by limitation, the concession was renewed, as was also that of the steamer *Campechano*, running between Vera Cruz, Progreso, and other intermediate ports.

A contract has been made with Mr. John C. Furman for the establishment of a line of steamers which will make at least monthly trips between New York and Progreso, touching at Vera Cruz. The said contract provides for the gratuitous carrying of the correspondence and other small advantages without any subvention whatever, while in exchange the line enjoys only the privileges and exemptions of ordinary mail steamers.

The Alexandre & Sons line of steamers for long years has discharged the postal service between Mexico, the United States, and Havana, receiving therefor a heavy subvention. Arrangements have now been completed with Mr. John Ritter, the agent of the company, to continue the said service without subvention.

In the exercise of the law of December 11, 1884, the executive has issued a decree whose leading provisions are the regulation of the payment of the tax on wheeled vehicles throughout the district municipalities, whose necessities increase daily, as well as the equitable scaling of municipal contributions.

Charity establishments are attended and improved as far as the state of funds sustaining the same will allow. These embrace the proceeds of the Lottery of Public Charity, which, under a contract made with the executive, is to be reorganized and its operations extended, so that not only will its contributions to the hospitals and asylums be increased, but the company engage to deliver shortly a large sum for the purpose of the improvement of all the charity establishments, and to aid in the construction of the district penitentiary, work on which proceeds with all possible celerity.

Work on the drainage of the valley, so justly the subject of public attention, has received fresh impetus. The board of management, in the exercise of the faculties it possesses under the regulations, has made a contract whereby this work will soon have its most important portion completed by

philanthropic institution all possible development, arrangements and combinations are being made, which will be promptly realized, and which will place at its service and in aid of its important operations the contingent of a large capital.

The decrees of December 29 and 30, 1887, have been promulgated, whereby vacancies have been declared filled in magistrates and judges of the federal district.

For the purpose of better serving the necessities of the public at Ensenada de Todos Santos, and under the provisions of the law of December 16, 1887, a district court was opened there, and has commenced its duties.

The law designed to do away with the difficulties attending the administration of justice in the Territories of Tepic and Lower California having been promulgated, the executive issued its corresponding regulations on the 21st of that same month.

The commission charged with framing the proposed code of federal procedure has continued its labors, and that part of the work relating to the organization and jurisdiction of the federal courts has been completed, for the purpose of facilitating its study.

The commission appointed to revise the code of commerce has its labors well advanced. The executive was desirous, in this connection, to meet one of the more immediate necessities of the case, as is, without doubt, the modification of the part referring to the matters of anonymous firms and of limited responsibility, and he has given especial attention to the proposals of the commission. In the use of the functions conveyed to him by congress in its decree of June 4th of last year, the new law providing for the regulation of the said societies will soon be issued, and will exercise due influence upon the mercantile and industrial interests of our Republic.

The curriculum of studies to be followed this year in the normal school and in the "Annex of Primary Instruction" has been recently issued. As the programme of the latter is to be employed in all other schools of its class, national and municipal, a great step has been taken in thus unifying instruction in all official schools.

In accordance with the new circular addressed to the governors of the States, recommending them to detail certain pupils to the normal school for the purpose of making uniform professorships throughout the entire Republic, the governors of Colima, Guerrero, Hidalgo, Morelos, Nuevo Leon, and Oaxaca have hastened to second the efforts of the executive in that connection, and it is expected that the other governors will not long delay like action, thus securing the ends sought, which will redound in transcendant good for the future.

For the greater financial convenience of the law college, various provisions have been ordered, which will, no doubt, result on the part of the teachers in greater application

session of Congress. Construction having been finished on the Mexican International Railroad, which unites the frontier town of Piedras Negras with the Central Railroad at the Hacienda of Torreon, that road was opened to traffic on the 1st of last March, thus starting a new line for the frontier of the North. The Central Railroad Company has continued construction on the several lines, from Tampico to San Luis Potosi, from Potosi to Aguascalientes, and from Irapuato to Guadalajara. A line of 180 kilometers having been finished on that branch, as far as Ocatlan, it was opened to traffic on the 19th ultimo. As the company is actively engaged in the construction of this road, it is expected that thereby, in a very short time, the important city of Guadalajara will become linked with the entire Republic.

As regards the National Company, it began reconstruction last October and November at both extremes of the line which is to unite Saltillo with San Miguel Allende. At last accounts there were 60 kilometers of track ironed on the branch from San Miguel Allende to the city of San Luis. The same company is actively engaged in raising the standard iron abutments of the bridge to cross the Rio Bravo, and which will probably be concluded by next May.

The companies who construct railroads with Mexican capital participate in the general impulse given to such enterprises, and with greater or less activity work of construction is proceeding on the respective roads, among which should be mentioned the interoceanic from Vera Cruz to Acapulco, which will soon open up new communication between this capital and Puebla, that of the Hidalgo Railroad, that of Marquez to Timapan, and those of the Yucatan companies, which are also somewhat advanced. It can be here added that the railroads constructed in the Republic now measure 6,800 kilometers. The telegraph web of the federation is being perfected alike in its survey, the construction of its lines and the service thereon. Various lines have been laid out, some of them with a second and even a third wire. The line is being stretched from Guadalupe y Calvo to Parral, which will open communication between the States of Chihuahua and Sinaloa, while the wire to connect Vera Cruz with Minatitlán has been begun, the same passing by Tlacotalpam and San Andrés Tuxtla.

On the 8th ultimo the cables purchased in England were laid between Jicalango and the city of Carmen, and between Puerto Real and Isla Aguado, thus placing in instantaneous communication the States of Yucatan and Campeche with the rest of the Republic. Two lines of the same cables were laid in the Grijalva and Coatzacoalcos Rivers, by all of which telegraphic communication has been established along the gulf coast. The extent of the land-lines laid from September up to the present reaches a total of 561 kilometers. Thirteen additional offices have been opened, while the 18,000 kilo-

in Paris next May. The executive replied deferring his final decision until December of the same year in order to form an idea of the elements at the disposition of the States and other Federal entities. Having gained that end, and having ascertained the favorable opinion of the country touching the great International Exposition to which it had been invited, and also bearing in mind that all the Republics of America had already signified their intention to participate, the executive finally accepted the invitation in the name of this nation, and at once began the labors necessary to the exhibit of Mexico, which were entrusted to the Department of Public Works. The executive trusts that congress, convinced that the participation by the Republic in that exposition can not fail to result in advantage thereto, will approve the measure, voting the sum provided in the bill to cover the expenses thereof.

Mining industries have progressed remarkably. According to the data up to the present received in the Department of Public Works, during the past five months 859 denunciations of property have been registered, including 10 beneficiating works. The partial reports resultant from visits to the mines clearly set forth the progress attained in mining, while the new explorations made, and those under way, demonstrate that there is much yet to develop, not only in mines of silver, but also of iron, copper, gold and coal.

The law of June 6th last, authorizing the executive to negotiate contracts under certain conditions, and with certain guarantees, has produced excellent results. Under that law 36 contracts have been made for the development of mining properties in the States of Mexico, Puebla, Guerrero, Michoacan, Queretaro, San Luis Potosi, Durango, Coahuila, Sinaloa, Chihuahua and lower California, it being noticeable that these works were conducted on new or abandoned mining properties. The guarantees offered by the concessionaires give promise that the contracts will be carried out, for up to the present, they are complying with their obligations, while some of them have organized companies abroad and secured capital for their undertakings. As one of the obligations they assume is the deposit by them within a specified period of a certain sum, it is safe to suppose that with those contracts and the five approved by congress before the passage of the law all of like intent, the sum at least of \$14,000,000 will be invested in mining operations.

The industry of agriculture has followed the ascendant course set by the industry of mining, it being noticeable that new cultivations such as those of the grape are the subject of peculiar attention on the part of private individuals who, following up the advantages given by the Government, are making direct importations of grape cuttings from abroad for the purpose of increasing their vineyards. The industries in silk and ramie fiber participate in this progressive movement. In connection with the progress of agriculture the acquisition of waste lands is proceeded with, as well as the several

more or less extent of said lands, part of which become the property of surveying companies, while the rest is reserved by the Government for sale and colonization. To the end that the Government portion may be unmistakably defined, engineering commissions have been appointed to operate in the States of Chihuahua, Durango, Sonora, Sinaloa and Puebla, in order to supervise the surveys made by the companies, and to take possession of the portion falling to the Government in its name. In addition to the lands surveyed by the companies, other lands have been denounced and acquired by private parties under the law of July 22, 1863, while many clouded titles have been cleared up, and the conflicting claims for excess or shortage by private parties. This has secured the possession of large tracts hitherto uncultivated and unknown, and thrown them open to cultivation and development, while it has also greatly contributed to raise the price of property, and to the development and advance of agricultural industries.

Upon the day designated by the constitution the budget of receipts and expenditures and the accounts for the closing fiscal year are submitted to you. As the laws governing our financial system have become more and more firmly consolidated, more satisfactory results are obtained alike in the collection of the taxes and in the accounting therefor.

It gratifies me to inform Congress that the public revenue during the last fiscal year, closing June 30 last, experienced a very perceptible increase, exceeding that from 1882 to 1883, which term yielded the best revenue of any year in our financial history. The net receipts amounted to \$31,000,000, an increase of \$3,000,000 over the preceding year.

This increase has allowed closer compliance not only with the service of the administration but has aided in the matter of public improvements and various other obligations that rested upon the public treasury, so that, at the close of the fiscal year, the liabilities were less than at any previous showing. It thus appears that while the last fiscal year showed an unprecedented amount for receipts, at the same time it accounted for unusually heavy payments.

Our system of accounting, closely related, as it is, to the budget, is being perfected every day; still experience, which is a true guide in matters of administration, is apt to reveal imperfections which it becomes necessary to correct. Thus it has transpired that at times payments have been made which have not been charged to any specific fund, and when three or four years later on they have been accounted for the present budget is forced to carry payments not effected now but effected long since. To meet this emergency, and to provide for the accounting of payments, and their consequent application to determined funds, the treasury has been instructed to open a special account therefor. I inform Congress of this proposed measure

maritime custom-houses, such as Vera Cruz, Progreso and Todos Santos, as well as others of minor importance, and to suppress the frontier custom-houses of Presidio del Norte, Quitovaquita, and the local tax office at Ensenada de Todos Santos. The Secretary of the Treasury will inform you in detail of these provisions to the end that if you consider them advisable they may be included in the budget of expenditures.

The principal edifices of the custom-house have been finished at Santiago Tlaltelolco, and the railroads having their termini in Mexico have been extended thereto. The final despatch of effects will hereafter be accomplished there, which will result in great advantage to the Government as well as to commerce, for thus the handling of goods will be expedited by being concentrated in one place. At the same time merchants have been given facilities compatible with the interests of the public treasury by being allowed long periods within which to warehouse their stores in the new customs buildings.

The executive, in pursuance of his purpose to extend further aid to commerce by freeing it from unnecessary restrictions, has been modifying the tariff now in force in the light of experience in the operations of the same. He has ordered that additions and corrections may be made in the manifests without penalty of fine, provided they refer to minor matters and not to important alterations. He further put on the free list several articles necessary to the development of industry, and increased the vocabulary of the regulations with a list of effects rated by analogy during the past months.

In questions of public credit the executive has not swerved from the course he adopted for the purpose of sustaining the good reputation of Mexico at home and abroad. Payment has been punctually made of the annual instalment of \$300,000 to the United States, as well as the interest of the bonds issued to date in virtue of the law of June 22, 1885.

The operations for the examination and conversion of the claims chargeable to the nation are conducted regularly by the offices to which these delicate transactions are entrusted. This has produced a flattering result inasmuch as it has established our credit and rendered Mexican values firm, and even raised them to a quotation higher than any heretofore.

In virtue of the authorization conveyed by the law of December 13 last, to contract a loan abroad for the purpose of consolidating our financial system, negotiations were opened with some European bankers led by one of the principal houses in Berlin. The negotiations were conducted in strict accordance with the provisions set by Congress. The contract was lately signed, and as soon as the Government copy arrives account will be given to Congress concerning this important matter.

As several of the Yaqui and Mayo Indians, who still elude pursuit in the forests, and refuse to submit to the Government, have attempted various assaults upon the frontier posts, the Government has taken measures to protect the frontier and to suppress the rebellious tribes.

The troops charged with the pursuit and capture of the bandits in the States of Durango and Sinaloa were reinforced, and then proceeded to man all the mountain passes, and to extend their plan of operations. As was to be expected this resulted in securing the most complete safety of the localities thus overrun, the leader being killed, several of his associates being captured and the rest of the evil doers being completely dispersed.

Efforts have been continued for the perfecting of the regime of the army and of its departments. The military college, during the last scholastic year, has furnished eight graduating officers to the engineer corps and the special staff, as well as 25 to the artillery service and other arms.

Work is constantly pushed upon the repair and construction of military edifices. In the town of Margaritas, located upon our Guatemala frontier, barracks were opened on February 5, last, for 1,000 men.

The floating dock, "Pedro Sainz de Baranda," has been placed at the service of the public, and several vessels have already been repaired there.

In order to better the tactics of fixed-artillery companies assigned to some ports of the Republic, a battalion has been organized, to be styled "coast and garrison artillery," and which is to be relegated to that sole service. A museum of artillery is being compiled in the national arsenal. The arm factory not only suffices now for the manufacture of the arms in use and their respective munitions, but also for the construction of a great part of the new armament of all kinds needed by the army, even in the possible contingency of being placed upon a war footing. The aforesaid factory has constructed a gun, in imitation of the Remington rifle, calibre of 9 milimeters, with its respective cartridge and ball coated with steel, and very satisfactory results have been reached in experiments made as to weight and initial power.

In the national foundry new iron foundries have been started, while foundries for the working of brass, copper, zinc, and other materials are to be mounted.

Finally new apparatus for ballasting and for all kinds of assaying have been brought from abroad, as well as instruments indispensable to the efficient working of the factories of artillery and to studies in army technique.

COLOMBIAN RAILROADS.

The information, obtainable only from government archives at the capital of the nation—so distant and so unapproachable except with a "golden key"—has rendered it necessary to rely on my own observations and the

The capital that might have built railroads and brought remunerative order out of a chaotic realm of natural wealth has been mainly spent in fostering and suppressing political revolutions.

The internal resources of Colombia in precious metals, coal, iron, copper, gums, dyewoods, medicinal plants, fibers and valuable timber should rank her among the most prosperous in the family of republics.

The only road in this consular district in actual service is the "Bolivar," between Barranquilla and Salgar, the port for shipment. A branch road to Puerto Colombia, not yet completed, will terminate at the pier now building where steamers can discharge and receive freight in the future. The railroads to be considered are the Bolivar, Cauca, Jirardot, the Antioquia and the Dorado. I name the Bolivar first as being the first in importance in its service and aid to foreign commerce, as well as in its perfect management.

A slight digression here may obviate a more prolonged explanation later. The mouth or delta of the Magdalena river, the great commercial artery for eight states of the Republic, is obstructed more or less at all seasons by a shifting bar formed by the sediment of the Magdalena, the Cauca and their hundreds of tributaries. It is and has been a "marine cemetery," so to speak, for the past forty or fifty years. Vessels enter the river sometimes with from eighteen to twenty feet of water on the bar, but a few days later, when cleared for departure, there may be but nine or ten. Loaded vessels outward bound have waited sixty or seventy days watching for the favorable combination, which seldom occurs, of a fair wind, good depth of water on the bar, a moderate sea and a reliable pilot to get safely out of this aquatic trap. And it is not an exaggeration to say that one-quarter part of the sailing craft has been lost in exit or entrance. Vessels have been lost on the bar when in tow of a powerful tugboat and piloted by one of the best experts on the coast. During the past month an American schooner, the *F. G. French*, of New Haven, could not get out on account of the heavy sea on the bar, the prevailing northerly wind and uncertainty of the eccentric channel, which may or may not be as it was upon the entrance. A British barkentine has been nearly two months in the same dilemma; and on the 26th ultimo the German brig *Enrique* was lost with a valuable cargo, and two of her officer were drowned in endeavoring to reach the proper entrance to this delta of the Magdalena—a river 800 miles in navigable length, exclusive of its tributaries, one of the great rivers of the world, but without a light-house, a beacon, or even a buoy to mark its entrance—with no landmarks, no pilots, and a channel as shifting and unstable as the sands that bar the entrance. It was to obviate this peril to life and property that the Bolivar railroad was constructed.

When the branch to Puerto Colombia is completed steamships can lie alongside a pier in smooth water, in a port easy of access, to discharge and receive freight. Sixteen thousand three hundred and seventy-one tons of exports from the

The exports are from the marginal towns and villages along the rivers accessible by river steamers, and only a fractional part of what might be sent to the coast for foreign markets reaches commercial channels through a lack of proper roads and the scarcity of labor. Seven steamship lines touch at Salgar to discharge and receive freight, mails and passengers. German line from Hamburg twice a month; Royal Mail twice a month, to and from Southampton; West India and Pacific, English, twice a month from Liverpool; Atlas, English, from New York, twice a month; Harrison, English, Liverpool and New Orleans, twice a month; General Transatlantic, French, twice a month, and the Spanish line twice a month. The passenger traffic over the Bolivar road from and to the Salgar terminus has more than doubled during the past three years.

Should the Dardo and the Antioquia roads be pushed to completion there would be four trains or more daily to Salgar instead of only two as at present. But of these roads we will speak in the proper routine.

The Bolivar is under American management; is owned by private parties. The rolling-stock now in service, of English manufacture, will be replaced as the necessity arises with American. The extension of the branch road to Puerto Colombia, on the northwest side of Salgar bay, makes the distance from the Barranquilla terminus to the pier eighteen miles. The Salgar terminus will probably be abandoned in the immediate future.

Barranquilla to Salgar wharf is fourteen miles, and the necessity for steamtugs and lighters between Salgar and the shipping will soon be abolished, and probably lower rates of freight will be established to the pier at Puerto Colombia.

The rate for passengers at present is \$5 per capita for first-class from Barranquilla to the shipping, or vice-versa; \$3 for second-class, and freight at the rate of \$2.50 per ton.

The Cauca Railroad.—This road, the construction of which was commenced in 1878, was to connect with Cali and the west bank of the Cauca river, has its present terminus at Cardova, 12 miles from Buenaventura. It is now government property; has been surveyed to Cali, but the work has been suspended.

At the time the contract was made the national government ceded to the grantee 500,000 acres of wild land on both sides of the line in alternate lots of 10,000 hectares each. During the construction of the road, and for five years after its completion, all the material for construction and operation—tools, food, medicine, etc., were to be free of duty, tax or impost. The state governments of Cauca and Antioquia were joint shareholders, the national government agreeing to contribute \$3,000,000, one half of the estimated cost of the road. An exclusive franchise for forty years was granted to the national government. The passenger tariff for the 70

An integral and important part of the contract was the construction of a pier at the port of Buenaventura to accommodate loaded trains and ships drawing twenty feet of water. As far as can be learned from unofficial sources, failure in payment of promised subsidies and revolutionary troubles have prevented the continuance of the work. The grantee on the one part and the government on the other made an amicable adjustment, and the line as far as completed (12 miles) became the property of the government of Cauca and the nation, and its future is a matter of vague uncertainty.

The Jirardot Railroad.—By reference to the accompanying plan it will be seen that this line has been completed to Portillo, 12 miles. The line has been surveyed to Bogota, a distance of about 80 miles. It is a government enterprise, and presents engineering difficulties of no ordinary character. The work is progressing slowly, but owing to the topographical features of the route six per cent. gradients will be necessary at several points on the line of survey; and it is considered doubtful whether the road when completed will ever pay its running expenses. Passengers coming up the river en route for Bogota prefer to leave the river steamer at Yegnas, taking the Dorado railroad to Honda; then they cross the river and proceed by the old mule road, consecrated by a century of usage. Comfortable hotels, in picturesque locations, break the journey into easy stages, and whether for business or pleasure the majority of travelers who have had a surfeit of river travel between Barranquilla and Yegnas do not care to spend two or three days more on a small steamer on the upper Magdalena for the doubtful pleasure of skirting mountain spurs and crossing ravines on trestle work among the Cordilleras. Remarks on the future progress and prospects of this line would be premature, its history is a subject for the future.

The Antioquia Railroad.—From Puerto Berrio to Medellin, 125 miles, has been completed to Pavis, 30 miles from Puerto Berrio. The first contract for this road was signed in February, 1874, modified on the 4th of May following, and in July, 1876, a new contract was made for the termination of the line at Barbosa, a distance of 100 miles from Puerto Berrio. This also is a road of heavy gradients. The State of Antioquia was to contribute at the rate of \$17,700 per mile, but not to exceed a total of \$2,000,000, upon which basis state bonds were issued. The state of Antioquia, as shareholders of one-third part of the enterprise, owned the right to one-third of its proceeds. The grant was for the period of fifty-five years, with exclusive privilege for thirty years, beginning from the first day of March, 1883. The same immunities and privileges in regard to duties and taxes, as specified for the Cauca road, were also conceded for the Antioquia. The maximum rates of fare and freight were, for first class passengers 12 cents per mile; second class, 8 cents; third class, 4 cents. Imports, 30 cents per ton per mile; exports, 25 cents; and coffee and tobacco, 15 cents a mile.

With this brief summary of the principal

There are to be 22 bridges, 115 trestles, 58 culverts, 4,135,288 cubic yards of earthwork, and 177,242 cubic yards of retaining walls. The central Cordillera, to be passed at its greatest depression, 5,177 feet above sea level, "requires the adoption of six per cent. gradient." But in spite of the difficulties to be overcome—the original design of the projector, the grand project of joining the Magdalena valley to the Pacific coast by the union of the Cauca and the Antioquia roads would open up a realm of wealth. There are 580 mines of gold or silver constantly worked, a large number without machinery within those mountain barriers, only accessible by bridle paths, rendering the transportation of proper tools and machinery impossible. On some of the interior rivers marble in inexhaustible quantities could be quarried, especially on the Claro and Nare.

Coal belts have been discovered, alum, sodium, calcium, manganese, cobalt, lead, zinc, mercury, arsenic, and platinum have been reported upon; agates, jaspers and variegated marbles are found in the mountains. The population of the more mountainous regions of Columbia are the bone and sinew of the nation—hardy, persevering, and industrious—good herdsmen, agriculturists, or foresters in times of peace, and brave and reliable soldiers in war.

Sugar, cotton, corn, rice, wheat, tobacco, cocoa, coffee, aniseed are some of the productions awaiting an outlet from the valleys and table lands of the interior to navigable waters. The space to which this report should be limited prevents a more detailed description of domestic and forest products intended to be reached by the Antioquia Railroad.

The Dorado Railroad.—It is necessary to refer to the Magdalena River, especially to that portion of the river between Honda and Yegnas, unnavigable when the water is low on account of the rocks, shoals, and rapids in that section of the river.

In 1872 the State of Tolima granted an exclusive privilege for constructing a railroad between the waters of the lower Magdalena, at Caracoli, and the upper Magdalena, at Honda, and a bridge across the river at Honda. A series of rapids and falls at this place forms a barrier between the upper and lower rivers.

The National Government guaranteed, for twenty-five years, 7 per cent. interest on the sum of £42,000 sterling—the estimated cost of the work. The preliminary surveys elicited adverse reports. That the capital so guaranteed was insufficient for the purpose, and that such a short line would be expensive in working, especially in competition with the time-honored mule train, that would still absorb a good portion of the traffic on the 3 miles of road. Navigation being difficult and dangerous for at least 30 miles below Honda, application was made for and a new concession granted with exclusive privileges. English capital could not be found for the

so great. The projected plan for the extra concession was to connect a port below 'El Dorado with Honda, and the bridge to cross the river at that place—about 30 miles along that part of the river most obstructed by shoals and rapids. The road has been completed to Yegnas, about 18 miles. Owing to revolutionary disturbances, additional time was granted (to August, 1885) to extend the road to Conejo.

The National Government grants a subsidy of \$5,833 per mile, as completed, and an exclusive privilege for eighty years, at which period it is to become the property of the Nation. Seven per cent. annual interest is allowed for any delay in the payment of the promised subsidy. The road between Caracoli, below Honda, and La Noria, above Honda, has been in service since June 1, 1882, effectually uniting passenger and freight traffic between the waters of the lower and the upper Magdalena. This, the most difficult part of the road, cost \$64,000, and the engineers have estimated the remainder of the road at a cost of \$16,000 per mile.

The bridge across the river at Honda will probably be built in the future, but as yet nothing has been done towards its construction. Some five years ago a Colombian railroad enterprise was inaugurated to construct a railroad from Puerto Wilches, on the eastern bank of the Magdalena River, to follow the valley of the Sogomosa River and reach Bueurmauga. The line was surveyed and a short section of track, less than a mile, was laid.

Both the State and the National Government contributed aid to the project. Presumably the revolution of 1884-'85 caused its suspension. Rumors of a new contract are current, but no official data has come to hand in regard to its prospects. Before closing this report mention should be made of a projected railroad scheme to connect Santa Marta with one of the up-river ports. There are 20 miles of road completed from Santa Marta to the Cienega station, and the line is being surveyed, it is reported, to Banco. As a large section of the line south of the Cienegas is on alluvial lands subject to overflow, and the main portion is through swamp jungle and across various lagoons and water-courses of promising difficulties; it would be premature to express any positive opinion as to its future. There are said to be copper mines in course of development within reach of the line that may be largely remunerative in the future, but it is doubtful whether profits derived solely from such a source would be able to cover the interest on sufficient capital to build such a road—through a district very sparsely populated—and in competition with the steamboat lines. —BARRANQUILLA, *March 10, 1888.*

S. M. WHELPLEY,
Vice-Consul.

TRADE WITH SHERBROOKE.

New mines are being opened, particularly copper, lime, and asbestos. Old works are being enlarged, a better class of machinery is being put in place with all of the modern appliances for carrying on the business. It might be expected that

dustries, the natural result is a yearly increase in Canadian exports to the States, although there is no great increase in manufacturing industries.

The principal exports from this port to the United States during the past year, dutiable and non-dutiable, as herein indicated, are as follows: One thousand eight hundred and sixty-one tons crude asbestos, free, valued at \$133,020; 8,993 cords of hemlock bark, free, value, \$43,725; 5,527 tons bituminous coal, dutiable, value, \$26,189; raw hides, free, value, \$30,058; 4,009,560 pounds wood pulp, dutiable, value, \$74,938; 21,753 lambs, dutiable, value, \$32,357; 112,445 bushels of lime, dutiable, value, \$19,394; 1,682 tons railroad iron, dutiable, valuation, \$35,513; telegraph poles, railroad ties, and other free lumber, value, \$36,403; dutiable lumber of all kinds, valued at \$286,387. Of the total value of declared exports, \$283,387 are free of duty; \$563,072 are dutiable, yielding an income to the treasury, approximating \$150,000; and \$65,537 in value were goods of American production imported into Canada and returned to the United States for one cause and another, duty free. The principal exports to the United States from this port are products of the soil, mines, the forests, and live stock.

It may also be observed that there are scarcely any manufactured articles shipped to the United States from this place with the exception of lumber, principally spruce, which is manufactured only to the extent as it comes from the saw in its rough conditions, including clapboards, lath, and shingles, also lime, which is sold by the bushel, the bushel being the unit quantity. About 35 per cent. of all the lime produced in this district finds a market in the United States, principally in Maine, New Hampshire, and Massachusetts, in which cases it is used almost exclusively by paper manufacturers on account of its great superiority in color, purity, and strength.

Wood pulp is manufactured quite extensively here, upwards of 2,000 tons having been exported to the United States from this district during the past year, nearly the whole production finding a ready market among the New England paper manufacturers. At present capital is finding a safe and remunerative investment, and there never appears to be a demand for such investments but what ready capital can always be secured.

There seems at all times to be a supply of both artisan and day labor, equal to the demand, at such prices as capital may establish from time to time, which may be said as a rule to range a little lower than is paid in the United States for the same service. Apparently labor and capital are on reasonably friendly terms, and no immediate danger of a conflict between workmen and manufacturers is apprehended, although it is quite evident that at no distant day the same complication in the labor question that is making the whole economic industry of the United States insecure and uncertain at the present time will present itself here, in fact it is already felt,

Consul-General Greathouse transmits the following table, showing the total values of commodities exported to and imported from the following named countries from and into Japan during the years 1885, 1886, and 1887:

Countries.	Exports from Japan.			Imports into Japan.		
	1885.	1886.	1887.	1885.	1886.	1887.
	<i>Yen.</i>	<i>Yen.</i>	<i>Yen.</i>	<i>Yen.</i>	<i>Yen.</i>	<i>Yen.</i>
United States.....	15,613,869	19,988,217	21,529,269	2,726,185	3,358,987	3,283,098
Great Britain	2,411,979	4,195,336	3,478,729	12,415,422	12,703,249	18,970,544
East India and Siam.....	492,084	649,143	459,389	3,396,965	3,561,319	5,422,609
France	6,735,912	9,632,703	6,528,397	1,329,866	1,330,914	2,313,346
Germany	463,933	864,459	921,783	1,665,653	2,313,659	4,010,919
China	7,655,769	9,594,907	10,510,033	5,763,650	7,123,851	7,985,821
All other countries	2,778,757	2,416,736	3,663,702	2,048,239	1,776,453	2,317,917
Total.....	36,152,003	47,341,721	50,091,242	29,345,380	32,168,432	44,304,251

FREE IMPORTS INTO CANADA.

The proclamation issued on April 4 by the Canadian Government is superceded by the following:

Now know ye that by and with the advice of our privy council for Canada we do hereby cancel, annul, and supercede our said hereinbefore in part recited Letters Patent, and under and by virtue of the powers vested in us by the said act, and by and with such advice as afore-said, we do, by these presents, proclaim and declare that the following articles, that is to say:

Green fruits and edible berries, in their natural condition, viz: Apples, apricots, bananas, cherries, olives, peaches, pineapples, plantains, plums, pomegranates, quinces and shaddocks. Blackberries, cranberries, gooseberries, raspberries and strawberries.

Seeds, viz: Clover, grass and flower, canary, chia, cotton, jute, mustard, (brown and white) sesame, sugar beet, sugar cane seed, and seeds of fruit and forest trees not edible. Seeds aromatic, which are not edible and are in a crude state, and not advanced in value or condition by refining or grinding or by any other process of manufacture (in addition to those already on the free list) viz: Anise-star, caraway, cummin seed and tonquin beans.

Trees, shrubs and plants, viz: Apple, cherry, peach, pear, plum, quince and all other fruit trees and the seeding stock of the same. Blackberry, currant, gooseberry, raspberry and rose bushes. Shade, lawn and ornamental trees shrubs and plants.

Vegetables, viz: Citrons, mangoes, melons and yams may hereafter until otherwise provided be imported into Canada free of duty. And we do further by and with the like advice, proclaim and declare that these our letters patent shall have and take effect from and after the fourth day of April instant.

TRAMWAYS IN VIENNA.

All of the tramways of Vienna are upon the surface of the streets. As yet I have heard of no project for high or elevated or subterranean tramways. As regards the return made by the tramway company for the use of the streets of Vienna, I am informed by the mayor of the city that under the original contract entered into between the company and the city, under date of March 5, 1859,

year 1886, to 125,000 florins. In April, 1887, the original contract was again amended, and the compensation to be paid to the city for the use of the streets by the tramway company was fixed at the annual sum of 2,220 florins per kilometer,* with the proviso, however, that the compensation was in no event to be less than 125,000 florins per annum.

I beg leave to enclose herewith a copy of the original contract of March, 1868, and a copy of the contract of April, 1887, amending the original contract in many important particulars.

The main provisions of these contracts cover the following points:

The plans of the construction of the tramways to be subject to the approval of the common council, the council reserving the right to order any changes it may deem expedient.

All lines of tramways to have double tracks, with a space of at least 11 feet between the tracks and between track and sidewalk. In narrow streets, a single track, with switches.

The quality of the material of which the tramway is built is prescribed by the contract. No tramway can be opened to the public until its construction is approved by the competent municipal authorities.

Right of way to cross established tramways to be granted to new lines.

The tramway company is held to clean, keep in order, etc., 8 feet of street for each track. The models for tramway cars to be submitted for the approval of the common council.

The company to employ a sufficient number of guards for the safety of the public and for the operation of the road. The instructions for these guards, as well as for the conductors and drivers, to be approved by the common council. The contract prescribes the fare and time-table, limits velocity, number of passengers for each car, etc., etc.

The company is held to great care to avoid collisions with wagons, etc., passing upon the streets, and is made liable for all damages arising from such collisions. (The doctrine of contributory negligence seems to have been disregarded.)

New inventions and improvements in tramways to be adopted at request of common council. The franchise of the Tramway Company to present holders is not transferable without the consent of the common council, and is limited to thirty-five years.

For each seat of cars in use the company pays in advance 1 florin annually into the pauper fund.

The company is not entitled to claim damages for interference with its traffic by means of movements of troops, public feasts, etc.

At the termination of the franchise the municipality may elect to either take possession of the tramway or to cause its removal, and the restoring of the tramway to its original condition at the cost of the tramway

etc., are to be transferred at their appraised value; but the municipality is not entitled to claim nor bound to accept the transfer of the means of transportation (transportmittel cars.)

The company is obliged to deposit as security for the proper observance of the conditions of the contract the sum of 300,000 florins in city securities. In case the company fails to fulfil any of the conditions of the contract, the common council reserves the right to declare any portion of the indemnity found forfeited in its own motive, and without any interference on the part of the judicial tribunals or administrative authorities. — VIENNA, *April 7, 1888.*

EDMUND JUSSEN,
Consul-General.

THE SUGAR-BEET INDUSTRY IN GERMANY.

To raise the price of sugar beet in Germany, which had sunk so low that the producers could scarcely realize any profit whatever in raising beets, the cultivation in the year 1885 was limited in as great a degree as possible. However, in 1886 the cultivation was again increased, when it was conjectured that the stagnation in the sugar market would soon be relieved; and besides it was a settled conviction that the cultivation of beet root as compared with other crops offered a more certain and profitable return. Large transactions in "futures" were entered into at high prices, which likewise stimulated and contributed to the increased cultivation. The crop of 1886 was a middling one, but it is generally acknowledged that the beets never before yielded so much sugar. The seed was sown in April, in warm, dry weather, and the cool and rather moist temperature of May materially aided the growth, and the hot spell from July up to September was most favorable towards the formation of sugar producing elements in the beets. Thus the crops were gathered in an excellent condition—a condition which was due in the first place to the very favorable season, and secondly to a careful selection of the seed and the manures.

The beets were sold mostly by their bulk weight, and only in exceptional cases were the prices regulated according to the percentage of sugar. Prices varied from 1.30 to 2.50 marks (generally 1.50 to 1.80 marks) per 100 kilograms, being a slight advance on the prices which obtained in the previous campaign.

The improvements made in the campaign year 1886-'87 in the technical working in the manufacture of beet sugar were mainly in the direction of simplifying the separation and purifying processes, as also in the saving of material and work. Especially the treatment of the juice with sulphuric acid found great use, and improved methods of filtration were more frequently adopted, while the use of bone coal has been almost given up. In the campaign year 1888

But in consequence of the low price of sugar and the proportionate high cost of molasses this process has not found use by a number of the factories supplied with the required apparatus, on account of its not being sufficiently remunerative. In 1885-'86, 78 factories worked with the osmose process, 79 in 1884-'85, 115 in 1883-'84, 124 in 1882-'83, and 135 in 1881-'82; by the *elutions* process of making sugar from molasses, 46 factories were occupied in 1886-'87, 51 in 1884-'85, 46 in 1883-'84, 50 in 1882-'83, and 44 in 1881-'82; by the *substitution* process, 10 in 1886-'87, 10 in 1885-'86 and 1884-'85, 13 in 1883-'84, 8 in 1882-'83, and 4 in 1881-'82; by the *precipitation* process, 2 in 1886-'87, 4 in 1885-'86, 5 in 1884-'85, 4 in 1883-'84, 6 in 1882-'83, and 4 in 1881-'82; by the *elimination* process, 17 in 1886-'87, 16 in 1885-'86, 13 in 1884-'85, and 2 in 1882-'83; by the *strontium* process, 4 in 1886-'87.

According to an estimate the following quantities of molasses were worked by the different processes by the above mentioned factories during the campaign year 1886-'87:

	Kilograms.
By the osmose process.....	470,962
By the elution process.....	850,811
By the substitution process.....	116,766
By the separation process.....	323,065
By the strontium process.....	64,428
Other processes.....	9,098
Total.....	1,837,130

The following table shows the number of factories in the German Empire, the different methods employed for extracting the juice, and the quantity of beets worked during the campaign years 1871-'72 to 1886-'87 inclusive:

Campaign years.	Number of factories.	Number extracting juice by diffusion.	Number extracting by press process.	Number extracting by other processes.	Beets worked.
					Tons.
1871-'72	311	52	216	43	225,091
1872-'73	324	63	220	41	318,155
1873-'74	337	80	214	43	352,876
1874-'75	333	113	181	39	275,674
1875-'76	332	157	137	38	416,128
1876-'77	328	197	98	33	355,003
1877-'78	329	224	81	24	409,096
1878-'79	324	258	50	16	462,874
1879-'80	328	291	28	9	480,526
1880-'81	333	309	20	4	632,220
1881-'82	343	324	16	3	627,194

The production, imports, and exports of raw sugar for the campaign years 1871-'72 to 1886-'87 inclusive were as follows:

Campaign years.	Production	Imports of refined and raw sugar, No. 19 and upwards.	Imports of raw sugar below No. 19.	Exports of raw sugar.
	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>
1871-'72	18,644	1,273	3,158	566
1872-'73	26,255	1,248	975	817
1873-'74	29,101	1,614	841	1,180
1874-'75	25,641	1,410	891	288
1875-'76	35,804	1,452	245	4,589
1876-'77	28,942	770	101	4,621
1877-'78	37,800	491	116	7,120
1878-'79	42,615	390	153	10,347
1879-'80	40,941	298	167	9,516
1880-'81	55,591	226	126	22,144
1881-'82	59,972	220	150	25,393
1882-'83	83,199	210	237	39,070
1883-'84	94,010	155	187	49,117
1884-'85	112,303	126	206	55,379
1885-'86	80,810	123	262	40,407
1886-'87	98,562	146	156	48,968

SELECTION OF THE SEED.

Taking the varieties in the same order as below given the following are the results of the experiments:

Varieties.	Density, Brix.	Per cent. of sugar.	Quotient of purity.	Product per morgen.
East Prussian.....	18.8	16.86	89.35	161.64
Knauer's Mangold II.....	19.1	16.82	87.78	171.72
Dippe's Sugar Richest.....	18.8	16.57	88.16	154.08
Knauer's Mangold I.....	18.4	16.40	89.00	212.94
Knauer's Improved Imperial (white).....	18.7	16.38	87.63	186.84
Dippe's Improved Imperial.....	18.5	16.24	87.63	184.13
Knauer's Improved Imperial (rose).....	18.2	15.95	87.51	176.58
Kl. Wanzleben Original.....	17.8	15.47	86.90	195.12
Knauer's Electoral.....	17.2	14.99	87.75	220.68
Aumühle.....	17.2	14.94	87.02	238.32
Mährisch.....	17.2	14.89	86.86	235.08
Koenigsberg.....	17.2	14.88	86.48	252.72
Knauer's Imperial.....	17.3	14.78	85.56	247.26
Factory Seed.....	17.1	14.78	86.73	267.12
Knauer's.....	16.9	14.74	86.94	225.00
Heucke's.....	16.6	14.18	85.07	267.89

There were sixteen different kinds of beets selected for the experiments, namely: East Prussian, Knauer's Mangold II, Dippe's Sugar Richest, Knauer's Mangold I, Knauer's Improved Imperial (white), Dippe's Improved Imperial, Knauer's Improved Imperial (rose), Kl. Wanzleben Original, Knauer's Electoral, Aumühle, Mährisch, Königsberg, Knauer's Imperial, Factory Seed, Knauer's, Heucke's Seed.

In latter years great care and attention have been given in Germany to the selection of the best beet seed. Professor Maercker, director of the agricultural experiment station at Halle, Province of Saxony, conducted in recent years a series of experiments with a variety of seed. The seed selected consisted of 26 different sorts, which were divided among 21 different experts for experiments. The following are the results obtained:

Denomination of seed.	100 pounds beets per German morgen.*	Per cent. of sugar in beets.	Per cent. of sugar in the juice.	Quotient of purity.	100 pounds sugar per German morgen.
<i>A. Sugar beet. Vilmorin race.</i>					
Gebr. Dippe's improved best white quality.....	148.8	16.28	17.86	86.2	24.24
Vilmorin blanche améliorée, original	157.7	15.59	17.05	85.5	24.19
Grosshoff (Quedlinburg), Vilmorin, second raising.....	177.0	14.89	16.04	84.7	26.29
Schäper (Rossla), Barbarossa, second raising.....	144.5	15.93	17.39	85.8	23.12
Schreiber & Son (Heringen), Vilmorin	141.4	15.39	16.91	85.1	21.83
Schlitte & Co. (Aumühle), Vilmorin, second raising.....	147.2	16.45	17.77	87.6	24.30
Hornung & Co. (Frankenhausen), Vilmorin, second raising.....	152.8	15.93	17.47	86.7	24.56
Sugar manufactory, Körbisdorf, Vilmorin, second raising.....	163.9	16.06	17.39	85.6	26.29
<i>B. Sugar beet. Kl. Wanzleben race.</i>					
Kl. Wanzleben, original, old raising.....	201.6	14.74	16.00	85.8	29.78
Kl. Wanzleben, original, new raising.....	189.4	15.38	16.39	86.6	29.10
Dippe's improved Kl. Wanzleben, best.....	183.4	16.16	17.51	87.3	29.55
Grosshoff (Quedlinburg), Kl. Wanzleben.....	179.0	14.29	15.36	84.2	25.55
Braune (Biendorf) improved, Kl. Wanzleben.....	201.5	14.75	15.84	85.9	29.57
Schreiber & Son (Heringen), Kl. Wanzleben.....	205.3	14.89	15.96	86.0	30.86
Schlitte & Co. (Aumühle), improved Kl. Wanzleben	184.9	15.71	17.02	86.4	29.08
Wilke (Gr. Möhringen), Altmärker, Kl. Wanzleben.....	209.5	14.34	16.05	84.4	30.09
Hornung & Co. (Frankenhausen), Kl. Wanzleben	166.2	15.40	16.93	86.7	25.82
Rabbethge (Einbeck), Kl. Wanzleben.....	183.1	15.21	16.17	85.5	27.72
Weinschenk (Lulkau), Kl. Wanzleben.....	196.2	14.84	15.76	86.2	29.32
<i>C. Vilmorin and Kl. Wanzleben. Cross.</i>					
Braune (Biendorf), Vilmorin and Kl. Wanzleben, cross	197.9	15.28	16.35	86.1	30.06
Strandes (Zehringen), Vilmorin and Kl. Wanzleben, cross.....	164.4	14.79	16.07	84.9	24.55
Bibrans (Uefingen), Vilmorin and Kl. Wanzleben, cross.....	174.4	13.81	14.92	83.5	24.01
<i>D. Various.</i>					
Vilmorin collet rose, original.....	204.0	13.74	14.60	84.4	28.03
Gebr. Mette (Quedlinburg)	198.1	14.98	16.30	86.9	29.66
Gebr. Mette (Quedlinburg), improved white imperial.....	185.0	14.61	15.78	84.7	27.02
Strandes (Zehringen), improved smooth leaf	193.3	14.29	15.44	83.6	27.79

ous to the planting the soil had been supplied with 100 pounds each of Chili saltpeter and nitrogenous phosphatic meal to the acre.

The question of manuring the soil is one that requires the greatest attention in the cultivation of the sugar beet. Careless and injudicious use of manures is more or less detrimental to the quality of the beet. In order to determine upon the quality and quantity of manures to be used it is necessary to possess a general knowledge of the physical character and chemical composition of the soil and the beets. The prejudice against the use of certain kinds of manures—such, for example, as saltpeter—seems to be unjust. But its abuse is detrimental, and therefore great care should be exercised in employing it. With reference to the question whether the percentage of sugar in the beets is determined by saltpeter manuring, the eminent Professor Wagner, of Darmstadt, makes the following observations:

If it has been formerly observed that by strong saltpeter manuring, notwithstanding that the same had been done in conjunction with phosphoric acid manuring, the amount of sugar in the beets showed a decrease of from $\frac{1}{2}$ to 1 per cent. or more, with a considerable reduction in the quotient of purity, the latest experiences furnish the satisfactory result that beet cultivators have succeeded in establishing more uniformity in the percentage of sugar in the various kinds of beets, which is not at all, or only very slightly, diminished by manuring with 200 pounds of Chili saltpeter per morgen. A great number of experiments have proved that by strong saltpeter manuring a considerable increase in the crops of beet was obtained without showing any important reduction either in the percentage of sugar or quotient of purity in the juice. But to obtain such favorable results the chief conditions to be observed are the following:

1. Cultivate excellent sugar-rich varieties of beets.
2. Procure the seed from the best and most reliable quarter.
3. Use with Chili saltpeter a sufficient quantity of phosphoric acid, in order that the ripening of the beets is not retarded.
4. Apply the saltpeter before the sowing of the seed, and do not use it as a top dressing.

The following results were obtained from a series of manurial experiments carried out under the supervision of the agricultural society on the light and dark beet soils of the province of Posen, which show the average increase per 100 pounds of beets in the crop:

	Average increase.
200 pounds superphosphate.....	7.8
200 pounds superphosphate and 100 pounds Chili saltpeter	27.3
200 pounds superphosphate and 200 pounds Chili saltpeter.. ..	37.6
100 pounds superphosphate and 200 pounds Chili saltpeter	28.0
200 pounds Chili saltpeter.....	17.2
200 pounds ammoniated superphosphate.....	5.3

A mere glance at the above figures will serve to illustrate the rapid growth of the beet-sugar industry in Germany during the last fifteen years. In the campaign year of 1871-'72 the production of raw sugar was only 18,644 tons, while in that of 1884-'85 it reached the enormous amount of 112,303 tons, showing an increase in twelve years of about 500 per cent.

PRODUCTION OF GOLD IN GUIANA.

For many years a difference has existed between the Netherland Government and the French Government in relation to the ownership of certain gold mining territory at Surinam. The difference appears to be founded upon the following circumstances:

Since 1816 the river Marowyne has been recognized by the Dutch and French authorities as the boundary line between Dutch and French Guiana. It appears that at some distance from the sea coast the Marowyne divides into two branches, and that in 1861, owing to disputes arising as to which of the two branches constituted the principal river or boundary line, a commission was appointed by the French and Netherland governments to examine and dispose of the question. In the month of November, 1861, the commission decided the question in a sense favorable to the claims of the Dutch Government. Notwithstanding this decision, until the present time no convention has been concluded between the two countries looking to the confirmation of the work of the commission; consequently the question still remains an open one.

So long as the disputed territory was scarcely populated and regarded as a sterile tract the question of ownership was of inconsiderable importance. Recently, however, the situation changed, owing to the reported discovery of large quantities of gold within the disputed territory.

Great numbers of gold searchers from French Guiana have, it is alleged, recently settled within the disputed territory, and caused no little dissension among the Dutch explorers, who now insist that the Netherland Government shall take energetic measures with a view to arriving at a definite solution of the disputed boundary question.

It is quite probable that this question will be the subject of an interpellation to the Government at the opening of the new chambers, which will probably occur next month.

I enclose a statement showing the value of the gold exported from Surinam during the years 1876-'86 inclusive. These figures have been submitted to the Minister of the Colonies and pronounced correct.

	Florins.		Florins.
1876	49,900	1882	784,726
1877	293,380	1883	903,943
1878	407,059	1884	1,305,698
1879	679,914	1885	1,331,774
1880	918,672	1886	1,032,767
1881	849,435		
Total			8,557,268

In 1884 there was exported 967,271 grammes, representing a value of 1,305,698 florins. Of this quantity there was exported to —

injurious effects which Malaga cooks would not "put up" with; however, in October, 1886, I ordered one with a full set of stove furniture, and had it shipped via Gibraltar for Malaga. Unfortunately, on its arrival here, having been badly packed, it was broken in many places. I, however, found an Englishman here who, being a good workman, by making some thin iron bands, succeeded in riveting the broken pieces together, and it was made serviceable for a time, the cost for repairing being almost as much as the original price of the stove. I then wrote to New York, claiming that the breakage had occurred through bad packing, and asking the firm to replace the broken plates, this they refused to do, but under compromise furnished the necessary pieces at cost price for cast iron, and in due season the box arrived in Malaga, but the freight and charges on same equaled those originally charged upon the stove itself.

I will now relate my experience in the use of this stove, at first my cook looked with perfect disdain upon the new comer and made every objection to its use, but it was not more than a month before it was the wonder and envy of all the cooks in Malaga, when it became necessary to clean the chimney, stove, and pipe; we ordered our cook not to light the stove the following morning but to use the "hornillos," to this the woman protested, saying she could not now use anything but the "Estua Americano," even in the heat of the past summer nothing could induce our Spanish cook to give up, even for a day, the use of this American stove.

In the course of time the fame of this stove was the subject of conversation with all the friends and acquaintances of our "Cocinera," and in October last two other families here ordered one of these stoves, each from the same firm that shipped mine. I sent the order myself, reminding them of the disastrous plight in which mine arrived, instructing them to spare no pains or expense in packing; when they were received in Malaga they were in a much worse condition than mine was, being all broken to pieces. They had been paid for and there was no redress. The stoves are almost worthless, and the parties who made the purchase feel that it is a "forlorn hope" to attempt to have them delivered in good condition at Malaga. Two or three other families here have expressed a desire to buy and use these stoves, and have been waiting to see the condition in which the last two ordered should arrive, with the results as stated above they now decline to order.

Instead of packing them as these were, put together complete for transportation, they ought to be packed each part separately, viz: One box containing say 6 top plates; 1 box containing say 6 bottom plates; 2 boxes containing say 6 side plates each; 2 boxes containing say 6 end plates each; 1 box containing lids and other parts. All well packed with plenty of straw or hay to keep them from breaking, and the stoves ought to be put

Again, the greatest drawback in the introduction of American manufacturers is the fact, as in stoves, a plate being broken by any accident the stove becomes worthless because there is no way to replace the broken part here. The same trouble exists in bringing, for instance, American petroleum lamps, the wicks, chimneys, and other portions being of a peculiar shape or make, can not be replaced as they wear out or break, and necessarily the article becomes worthless. I know one firm here who supplied these houses, offices, warehouses, etc., with American lamps four years ago, with a barrel full of extra chimneys, the same having all been broken, the lamps are thrown aside, for none can be purchased here; it is too far to send to the United States for chimneys.

American houses may send illustrated circulars, but Spaniards want to see the article itself. An agent can readily be selected in almost any location who will receive consignments and who, with a full supply of everything where every part can be replaced in case of necessity, could introduce any good American cooking stove, but they must draw and have ovens that will bake well. I know of no better opportunity than this part of Spain where this class of stoves could be disposed of to advantage, and the firm who first introduces any particular make of stoves will control in the future the business here, for once satisfied the Spaniard never likes to change.

There is here also a splendid opportunity for the introduction of all kinds of American hardware, for our manufactures beat the world, especially in the finish of the article. English-made goods unnecessarily contain more than double the quantity of metal, are heavy, cumbersome, and uncouth in appearance, while ours have all the required strength for durability, with the additional "finish," which English make does not possess. There is not an American hatchet for sale in Malaga, and yet nothing that will take its place.—MALAGA, SPAIN, *February 17, 1888.*

H. C. MARSTON,
Consul.

TOBACCO MANUFACTURE IN ALGERIA.

If I am correctly informed a bill which will certainly, if adopted, contribute to extend the commercial relations between the United States and Algeria, is about to be introduced into the French Legislature.

The object of this bill is the protection of the local tobacco manufacturing industry by the establishment of a new duty on manufactured tobacco imports.

Algeria itself is, as the following table will show, quite a large tobacco producing country.

Years.	Hectares.	Kilograms.
1881-'82.....	8,663	5,499,054
1882-'83.....	8,663	
1883-'84.....		

Part of this tobacco is bought by the French Government, part is exported, and the remainder is used by the local industry. Tobacco growing and manufacturing are in the colony entirely free, subject to no government control nor internal revenue taxation. This tobacco is not as a rule of the finest brand, requiring the addition of a certain proportion of foreign tobacco to improve the flavor. In spite of all the advantages it may enjoy the local industry can not compete with the German and Swiss manufactories for the following reasons:

1. In Germany and Switzerland the price of labor is much lower than in Algeria. In Germany, for instance, the fabrication of 1,000 cigars costs from \$1.00 to \$1.20, while in Algeria it costs from \$2.45 to \$2.60.

2. Leaf tobacco is introduced into Germany in bond with temporary admission. If duty has been paid, the manufacturer enjoys not only the benefit of drawback on his product exported, but he is allowed a bonification of 8 per cent. for waste. The Algerian manufacturer is obliged to pay a duty of 23.80 francs per hundred kilograms. Thus to put in market 1,000 cigars costs the Algerian manufacturer from \$1.90 to \$2.00 more than his German or Swiss competitor, and when we consider that about 40,000,000 cigars are annually imported from these last mentioned countries it will be seen to what a disadvantage the colonist is placed when compared with his rivals. To obviate this state of inferiority the bill proposes the following duties:

1. On cigars and cigarettes 150 francs or \$30

2. Snuff and chewing tobacco 100 francs or \$20 per hundred kilograms.

But you notice, sir, that these duties only apply to manufactured tobacco, those on leaf tobacco remaining as before 13.80 francs per 100 kilograms. Under the conditions thus created the importation of manufactured tobacco from Germany and Switzerland will be checked, and the Algerian manufacturers will have to supply the market and make good for the difference. Thus, notwithstanding the considerable quantities of tobacco now imported in order to raise the quality of the native plant, a large proportion of that which is now introduced into Germany and thence exported as cigars into this country will become the object of direct transactions between foreign tobacco growing countries and this colony. American dealers would thence, I think, do well to give their immediate attention to this matter. Open commercial relations with this and the other important places of Algeria, and secure the market before their competitors come into the field. — ALGIERS, *March 20, 1888.*

CHAS. E. GRELLET,
Consul.

CAMPHOR MONOPOLY IN FORMOSA.

[THE FOREIGN OFFICE TO MR. DENBY.]

had the honor

carried on as a Government monopoly. In regard to this case the Yamèn has sent repeated communications to the governor of Formosa, in which the question at issue has been discussed. During the summer of 1887 the Yamèn received a report from the governor of Formosa, as follows: "Shui Ti Liao is over 300 li from the capital of Formosa, and conterminous with the borders of the districts inhabited by the aborigines. The passes issued by the customs authorities clearly stipulate that foreign merchants in purchasing camphor must not proceed to places in close proximity to the country occupied by the aborigines and their trade, to the end that trouble may be avoided. In the present case of the German merchant, Tui Hsing (hauts and Haesloop), proceeding to the said place to trade—this was a violation of the stipulations of treaty set forth in the customs passes. In a word, Formosa camphor is not produced in the outer mountainous region inhabited by the Chinese. Since the tenth year of Kuangtsii no exportation of camphor has been made, and as evidence of this fact there is the customs return, which can be examined. The provincial monopoly in camphor is in that produced in the inner mountainous region inhabited by the aborigines, which has been brought under subjection by the governor. The provincial government has, at its own expense, established military stations there as a means of protecting this business. It will thus be seen that the present condition of affairs is not the same as formerly. Foreign merchants are still permitted to purchase camphor, if procurable, near the sea ports, the same as the German firm, Tui Hsing, who have also made purchases at Lu Chiang, a place settled and free from disturbances. But to places conterminous to the region settled by the aborigines foreign merchants should not proceed, in due observance of the conditions specified in the customs passes.

"As to Shui Ti Liao, this is a place where the aborigines appear and disappear. A feud exists between the Chinese and aborigines there; they kill each other, and there are repeated cases of murder. There can be no harm by the foreign ministers at Peking instructing their respective consular officers, in conjunction with the local authorities, to proceed to said place for the purpose of ascertaining whether or not it is conterminous to the boundaries of the aboriginal region. Whether or not Chinese as well as foreign merchants formerly bought camphor there it is not convenient to accept the one-sided statements of foreign merchants and there alone as authentic. The present system of conducting the camphor trade in Formosa is not in violation of the treaty and agreement."

The Yamèn would observe that from the above report, at places near the seaports, camphor, if procurable there, can still be purchased by foreign merchants without regard to whether it is official or not, but in the inner mountainous regions, settled by aborigines, recently brought under subjection by the governor of Formosa, as the trade has been opened at the expense of the Government, makes it another matter, and the action taken by the Formosa authorities can not be regarded as a violation of treaty or of the agreement in their placing the trade in question under official control. Disturbances easily arise in the districts settled by the aborigines, and in not wishing foreigners to proceed far into the interior is purely from a desire of complete friendliness. The action taken in the premises is in accordance with the treaties.

The Prince and ministers believe that your excellency will with a spirit of impartiality look into the matter and regard the statements made in this communication as being in order.—
PEKING, *February 16, 1888.*

OLEOMARGARINE.

It is reported to me that the trade in this article has resulted very satisfactorily during the year 1887. The imports of it, especially from the United States, have been much larger.

That the figures representing the imports and the stock on hand towards the end of the year justify the conclusion that the manufacture of artificial butter was greater than in previous years, and thus that the consumption of this properly and highly valued substitute for natural butter has considerably increased.

It is further stated:

That all measures devised and taken in certain quarters to suppress the article or rather entirely to annihilate its existence, have only served to make it better known, more popular, and to enlarge the consumption of the same. The law in Germany, relating to artificial butter, for instance, it is claimed has had no other effect than the extension of existing "butter factories," and that others are about to be established in that country. It is probable, and to be wished, that the new law concerning butterine in England, and which came into force on the 1st of January, 1888, will have a similar result.

The quotations clearly show what is felt or thought upon the subject of all laws anywhere, and which are intended or calculated to curtail the production of a substitute for natural butter, and its sale and consumption by interested parties in this country. The year's (1887) trade began with very little stock on hand and a considerable demand, so that the first or earliest imports were eagerly looked for, still the holders of them on account of the then rather low ruling butter prices could not realize above 65 to 67 florins per 100 kilograms, prime American brands. As somewhat later on imports increased and demands slackened, prices about middle of February came down a few florins; but imports continuing to pour in so largely increased the stock as to cause prices in April to recede even to 52 and 53 florins for prime goods. Afterwards changes in the prices occurred but unimportant until in June a quite noticeable improvement in the demand again brought them up to 59 and 60 florins; but in August butter manufacturers and speculators making large purchases, operations based upon the poor condition of the grass crop, prices advanced to as much as 70 and 72 florins, even as high as 79 florins was paid for the mark "Harrison" in one instance. Thereupon followed a reaction, prices fell and closed in December at about 64 to 65 florins. I see it remarked that full and satisfactory reasons for the rise and fall in prices for "oil" can in most cases not be stated, as that is influenced by too many factors.

According to a statement published by a firm in Rotterdam, which is prominently identified with and entirely competent to furnish authentic information regarding the trade in the article in question, the imports of American margarine were in 1887, as follows:

111,000 tierces about 17,800,000 kilograms at Rotterdam. 66,600 tierces about 10,000,000 kilograms at Amsterdam. Total 184,600 tierces about 27,800,000 kilograms, against a total of imports at Rotterdam and Amsterdam of 121,480 tierces or about 18,300,000 kilograms in 1886, and 121,287 tierces or about 18,280,000 kilograms in 1885.

The entire stock on hand on the 31st of December, 1887, is reported to

the wants of the butterine, or artificial butter manufacturers in Holland. The great bulk of the "European oil," which is imported into this country, does not get into the hands of the regular trade, but is shipped directly to different butterine manufacturers. It is claimed to be chiefly on this account that no statistics showing the quantities imported during any given period can be procured. However, a commission merchant, one very largely engaged in the trade in "American oils," and who is well informed on all operations in the article, reports to me as follows:

The imports of European margarine into Holland in 1887 were also very large, and that it is safe to assume that they amounted in the aggregate to nearly, if not fully, an equal quantity imported during the same period from the United States. He made to me the further interesting statement:

That the manufacturers of artificial butter in Holland never in any one year turned out so large a product as in 1887; that it is estimated to have amounted in value to about 75,000,000 of florins, and that the artificial butter making industry is now, so far as value of product is concerned, one of the largest if not the most important manufacturing interest of the Netherlands.

BACON AND LARD.

The imports of and trade in American bacon and lard in Holland, which up to four or five years ago were of rather considerable importance, have since from year to year so greatly declined as to be now or for the year 1887 looked upon, I regret to say, as no longer deserving the notice of those engaged in wholesale operations in those articles. For illustration I would mention that a few days ago I was told by a dealer in hog products of this city that he imported from the United States in 1880 nearly 3,500 cases of bacon, only 900 cases in 1886, and in 1887 hardly 300 cases. There remain only such imports as from time to time take place in small lots by retailers.

The chief if not the sole cause of this market being now almost closed against the American hog product consists hereof that for a number of years last past the farmers of this country have gone and are from year to year more and more going into the pursuit of hog raising, which it said they can now manage to make tolerably renumeration on account of the low prices ruling for rye and other swine fattening substances.

This in turn has reduced prices for pork and hog products generally to such a degree as to almost entirely exclude for the present at least competition from the United States. From Holland there are now a days, as I am informed, regular and large shipments made of slaughtered hogs and other hog products to England and to Germany, or at least to Hamburg. — AMSTERDAM, *January 21, 1888.*

D. ECKSTEIN,
Consul.

POST-OFFICE TELEGRAPH SERVICE IN GREAT BRITAIN.

Following is a statement showing the gross amount received and the gross amount expended in respect of the telegraph service in Great Britain from the date of the transfer of the telegraphs to the state to the 31st March, 1887:

	Amounts received by post-office in respect of telegrams, private wire rentals, etc.	Amounts received for old materials.	Amounts received for waste paper, etc.	Value of services performed without remuneration.	Total receipts.	Total expenditures.	Balance to meet interest on stock, and redemption of debt.	Balance of expenditure over receipts.	Total.
	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.
December 1870 ...	609,734 19 1	.....	1,100 0 0	1,466 11 1	612,301 10 2	350,376 4 6½	261,925 5 7½	.....	612,301 10 2
" 1871 ...	732,365 11 2	.....	1,250 0 0	1,774 8 11	735,390 0 1	496,694 16 3	238,695 3 10	.....	735,380 0 1
" 1872 ...	970,083 6 9	.....	1,409 0 0	1,839 19 4	973,332 6 1	833,908 4 3½	139,424 1 9½	.....	973,332 6 1
" 1873 ...	1,045,543 19 4½	.....	1,268 0 0	2,350 8 7	1,049,162 7 11½	956,170 0 6½	92,992 7 4½	.....	1,049,162 7 11½
" 1874 ...	1,160,538 0 1	2 5 1	1,350 0 0	5,854 15 8	1,167,745 0 10	1,081,937 2 5½	85,807 18 4½	.....	1,167,745 0 10
31st March, 1875 (a) ...	242,505 7 ½	8 9 11	326 0 0	3,518 19 6	246,350 10 11½	323,797 8 1½	103,272 4 2	.....	1,533,982 5 11½
31st March, 1876 (a) ...	1,276,662 8 8	14 19 3	1,252 0 0	9,694 1 7	1,287,617 10 8½	1,106,912 13 8½	.....	.....	1,328,315 2 7½
" 1877 ...	1,313,106 17 6½	27 9 10	1,335 0 0	13,845 15 3	1,328,315 2 7½	1,208,401 17 4½	119,913 5 2½	.....	1,352,668 18 5½
" 1878 ...	1,333,542 8 2½	21 6 7	1,688 0 0	17,417 3 8	1,352,668 18 5½	1,227,560 12 8½	125,108 5 9	.....	1,369,467 19 7
" 1879 ...	1,346,892 6 10	142 18 10	1,830 0 0	20,602 13 11	1,369,467 19 7	1,161,551 3 3½	207,916 16 3½	.....	1,469,795 6 6
" 1880 ...	1,452,489 3 6	507 1 1	1,417 0 0	15,382 1 11	1,469,795 6 6	1,173,287 6 4	296,508 0 2	.....	1,633,886 14 9½
" 1881 ...	1,610,908 5 1½	692 13 3	2,807 0 0	19,478 16 5	1,633,886 14 9½	1,308,453 19 3½	325,432 15 6½	.....	1,654,390 13 6
" 1882 ...	1,630,443 0 8	67 2 8	1,960 0 0	21,920 10 2	1,654,390 13 6	1,440,498 6 10½	213,892 6 7½	.....	1,768,070 10 1½
" 1883 ...	1,740,063 16 3½	40 17 7	1,878 6 3	26,087 10 0	1,768,070 10 1½	1,583,876 18 4	184,193 12 1½	.....	1,808,920 12 4
" 1884 ...	1,760,898 12 11½	32 0 2	2,517 15 0	25,775 2 5	1,789,223 10 6½	1,808,920 12 4	.....	19,697 1 6	1,820,764 6 9
" 1885 ...	1,755,118 14 9½	69 7 0	2,128 15 10	27,097 8 2	1,784,414 5 9½	1,820,764 6 9	.....	36,350 0 11½	1,832,401 16 10½
" 1886 ...	1,758,169 10 9½	350 2 11	1,748 0 0	26,997 0 0	1,787,264 13 8½	1,832,401 16 10½	.....	45,137 3 2½	2,032,632 8 10½
" 1887 ...	1,855,686 1 5	78 15 5	2,188 0 0	29,206 17 10	1,887,159 14 8	2,032,632 8 10½	.....	145,472 14 2½	24,143,228 1 3½
.....	23,594,752 10 3½	2,055 9 7	29,452 17 1	270,310 4 5	23,896,571 1 4½	21,748,145 18 4½	2,395,082 2 11	246,656 19 10½	24,143,228 1 3½

The fourth section of the act 39 Vict., chap. 5, the period for which the parliamentary account of the receipts and expenditures of the telegraph service is to be rendered in the year to 31st December, to the year to 31st March.

STATE OF COAHUILA.

ITS SITUATION, LIMITS AND PHYSICAL ASPECT.

According to the general statistics of the Republic of Mexico, the State of Coahuila is located in longitude west of Mexico between $0^{\circ} 37'$ and $4^{\circ} 4'$, and in north latitude between $24^{\circ} 31'$ and $29^{\circ} 55'$. Its territorial extent is estimated at 131,800 square kilometers, or an area of 11,000 square leagues as claimed by the local authorities.

The northwestern portion of the State called "El Desierto," was formerly inhabited by savage tribes of Indians, who made frequent incursions on the villages bordering on this section, so that it has not only remained unsettled but comparatively unknown, until within the past few years. It has recently been thoroughly surveyed, and an authentic map will eventually be published.

The State is bounded on the north by the United States of America, from which it is separated by the Rio Grande ("Rio Bravo del Norte"). It is bounded on the east by the States of Tamaulipas and Nuevo Leon; on the South by San Luis Potosi and Zacatecas; and on the West by Durango and Chihuahua. Its population is estimated at one hundred and fifty thousand inhabitants.

In the central and southwestern portions are extensive prairies and fertile valleys, adapted to profitable cultivation and stock raising. The "Laguna" district especially, is a section of the most prodigal exuberance, and one of the richest agricultural portions in the State, and even of the Mexican Republic. Its alluvial soil, composed of clay and sand, with an admixture of calcareous substances, renders it of easy cultivation and preserves a sufficient degree of nutritious moisture for the prompt germination of seeds and a rapid growth of the plant. From a bushel of corn three hundred bushels may be easily grown, and one bushel of wheat will produce a hundred; while cotton, which is the chief industry in this portion of the State, gives a net profit of from 75 to 150 per cent. according to its proximity to the "Rio Nazas." With the exception of the plantations of "Hornos" which were formerly the property of the Jesuits of the "Colegio de Parras," this extensive tract of land, at one time, belonged in most part to the Marquisate of Aguayo.

For the sum of two hundred and fifty dollars twelve and a half cents, (\$250.12½) the Royalty of Spain granted to the Marquis of Aguayo and "Santa Olaya" 115¼ "sitios" of sheep grazing lands and 28 "sitios" of cattle pasture, (in all about 246,287 acres), of which D. Juan de Ortosum took possession in the name of the Marquis Don Francisco de Urdiñola, Sr., styled also Captain of Mazapil and conqueror of this portion of Mexico.

The surveys which were made in April, 1731, by D. Prudencio de Bastera, mayor of Parras, began in the Valley known as "El Valle de las Animas," terminating

The northwestern portion of the State of Coahuila may be classified, topographically, under four principal heads, viz: Mountains, table lands, hills and plains, which will be treated separately.

MOUNTAINS.

There are six distinct chains of mountains that bound or traverse the northern territories of the State; they are the "Serranias del Carmen," "Serranias de la Catedral," "Cerros de San Geronimo," "Serranias del Nevado," "Sierra del Consuelo," and "Sierra del Bravo"; the last mentioned five ranges bearing local or state names.

Las Serranias del Carmen.—This range forms the southern limit of this country from the peak of the "Centinela" to the "Boquillas," a distance of 35,320 meters, or eight and a half leagues. It lies nearly in an eastern and western direction. It is the highest range in this section of the State, and has several blades or small ranges extending in a northerly direction, between which are fertile valleys covered with grass and well supplied with water by numerous springs and ponds. Especially notable are the table lands near the "Centinela," known as the Garden (Jardin), for their exuberant vegetation. The mountains are covered with grass to their summits, where groves of pine, cedar and oak are found. Fibrous plants—lechuguilla and zotol—are found in abundance.

Its area is about twenty "sitios mayores" (86,700 acres). It is well adapted to the raising of small stock.

Serranias de la Catedral.—This range is situated about four leagues from the preceding. Its highest peak is known as the "Pico Etéreo." It is composed of a collection of high precipitous and rocky peaks, short irregular ranges of hills, without vegetation of any kind except near the foot of the mountains. The valleys and pasture lands formed by these ranges abound in water and grass, and in consequence of their accessibility, and the protection against inclement weather afforded by the surrounding hills, they are adapted to stock raising of all kinds. Its area is about three sitios, or thirteen thousand acres.

Cerros de San Geronimo.—Situated two leagues from the last mentioned range. It is a long low chain of mountains extending from northwest to southeast, covered with grass and zotol to their summits. It contains fine grazing lands, but lacks the amount of water necessary for a large number of stock, as it has no permanent streams and but few water holes of small capacity. Artificial supplies could however be easily provided with but little cost. Its area is about sixteen thousand three hundred and fifty acres.

Serranias del Nevado.—In some of the Government maps this range is called "*Serranias del Burro*," though in this State the preference is given to the former, it being the name of its highest peak which is situated in the center of the range. It extends in a northwesterly direction to the "Rio

noted for their rounded summits. They are traversed by deep gullies, which uniting, form large streams and water holes in the valleys below. These mountains are covered with dense forests of pines, *piñones* and cedar, which are also seen extensively in the valleys. The valleys abound in grass and are dotted over with springs of water. The three most valuable peaks of this sub-range are the "Cerro de los Arboles," "Cerro de Huashua," and the "Cerros de las Labores." This latter is so called on account of the Indians in early times having dammed up the water in this vicinity and used it for irrigating the small farms which they cultivated.

Water is found high up in the mountains in great abundance, and here grow in vast quantities the famous "maguey" plant. Its area is about 7 "sitios mayores" 30,345 acres. "Las Cierras del Cibolo" extend irregularly from the "Puerto de Riesgo" to the Rio Grande. Forest trees, fibrous plants and grass are abundant throughout this range, and stock of all kinds find abundance of grazing and water. The springs are comparatively few, but the water is found in "tinajas" water holes, of which the most notable are the "Agua Nueva," "Monos," "La Palma" and the famous "Tinaja Bonita," anciently called by the Indians "La Tinaja Colorado" on account of the red sand-stone which forms its sides and bottom. Long deep valleys divide and traverse these ranges, one of which called the "Puerto del Cibolo" passing through a rift in the mountains of the same name, forms a natural road from the most southern extent as far north as the Rio Grande, and forming a junction with another from the village of Muzquiz to Bavia and Piedra Blanca (White Rock), at the last named village. Its area is 73 sitios 316,450 acres. The total area of the "Serranias del Nevado" range is about 80 "sitios" or 346,800 acres.

Sierra del Consuelo.—This range lies north of the "Sierranias del Cibolo" (Buffalo Range). It is a narrow low chain of mountains covered with grass fibrous plants, and easily accessible to herds.

The valleys, whose streams run easterly to the Rio Grande, are abundant in pasture lands and conveniently accessible water holes. In this section "zotol" is notably abundant and of large growth. Its area is 5 "sitios" or 20,675 acres.

Sierra del Bravo.—This range lies west of the Cibolo chain, from which it is separated by a narrow gateway and extends westwardly. The valleys or gullies formed by this range are wide and deep, with high perpendicular walls or palisades running nearly parallel with the Rio Grande, and forming the rockiest portion of the State. It abounds, however, in water, grass and zotol (the latter a species of palm much used for brooms and floor matting), and has an area of about 17,340 acres.

There are isolated chains of mountains in this region, the principal ones known as the "Cerro del Burro," "Cerro del Colorado," and the "Loma del Mosquito." They are in general well supplied with pasture and water, and covered with groves of oak, pine and cedar.

HIGH PLAINS OR TABLE LANDS.

From that broken and mountainous tract of country extending from the highest peak of the "Burro" range to the river, including the before-mentioned ranges, known as "Flores" and "Cibolo," is an extension of some 151,725 acres of high plains or table lands. It is cut up by deep ravines which, commencing in narrow gullies, widen out into fertile valleys.

This extension of plains is covered with grass and spotted with abundant water holes. The second portion of this division is located between "Bravo," "Rio Grande" and the "Cibolo" ranges, and comprises an area of about 86,700 acres. It is much broken by deep precipitous gullies, abundant in immense quantities of grass and plenty of water in all parts. The entire area of these plains being about fifty-five "sitios," or 238,425 acres.

HILLS.

Included under this are three grand portions of hilly country—the first in the neighborhood of the "Mojonera del Caracol," extending in the direction of the river and "Loma del Mosquito," has an area of about 43,350 acres, in which the water is scarce, but might be rendered abundant by means of artificial water holes. It is covered with grass, "zotol" and "lechuguilla" and well adapted to the raising of small stock. The second extends along the Rio Grande a distance of some thirty miles, and from three to six miles in width. It has about the same character as the former, with the exception that the water is abundant, being contained in large and accessible water holes. Its area is about 65,025 acres.

The third part of this class of country is located between the "Pico Etéreo" and the "Boquillas" ranges.

They are low hills whose vegetation is the same as the preceding, and sufficient water supplies in creeks, water holes and the Rio Grande, which in this section is everywhere accessible. Its area is about 65,000 acres.

PRAIRIES.

This heading comprehends all the territories not comprised under the preceding divisions. It is covered in all parts with grass and zotol, and in some by "lechuguilla," "maguey" and "nopal." It is for the most part destitute of permanent water, though traversed by a multitude of creeks or shallow river beds originating in the mountain ranges from which in the rainy seasons permanent deposits of water might be secured at small expense by artificial preparations in addition to permanent supplies by means of wells.

These lands can not be considered fully adequate except as pasture lands or stock ranges, in which capacity they are unsurpassed along the northern frontier.

All kinds of grass are found throughout its entire area, except on the sum-

species, the former producing a head of from 1 to 2 feet in diameter, and the latter a fiber long and fine.

Considering these lands in this agricultural aspect the only irrigable parts are those near the river, which are not extensive, so that they could not be exclusively dedicated to agriculture with profit.

Any of the low land would serve for short crops, and in rainy years produce abundant crops of all kinds, the land being a rich sandy loam. The groves comprise pine, piñon, cedar, and oak, of which the best are found in the "Flores" and "Carmen" ranges.

The formation of the mountains is primary and secondary, the rock being composed of granite, syenite, lime, and sandstone.

Indications of gold, silver, and copper are found in the Carmen range and near the Nevada peak; iron is found in nearly all the ranges. That portion of the extensive valley of the Sabinas River in which are located the farms called the Nacimiento, San Juan, Soledad, and the village of Santa Rosa, with its numerous surrounding farms, about a league distant, and covering a breadth of some 3 leagues at the foot of a mountain range of some 3,500 feet high, extending northwest to southeast, is covered with dense forests of oak, pine, and "tazcate," and on the west with the rocky ranges of Antonio Lopez de Santa Ana, which at the point of the Cojos joins that of Santa Rosa. On the north we have first the place called "Sierrita," which in part borders on the great plain of the Nacimiento and, touching the river at the "Rincon," forms the dividing line of the Nacimiento country, running first northwest, thence making a turn and joining the "Sierra de las Borregos," which range runs parallel with the gateway of the Antonio Lopez de Santa Ana range, extending to the cañon of the "Cabezones" Creek—a peak, seen at a great distance, forming its highest altitude.

On the eastern side of the Sierrita lie the two valleys of the Sabinas and the Alamo, separated by some low hills, and their great low lands extending to the foot of the Lomas de Olguin, more than 6 leagues from the Sabinas River.

On the east of the point of Olguin commence the low lands of the Alamo, which here reach their widest part, extending to the foot of the Sierra de San Diego. Toward the south rise the table lands of the Soledad, Cacanapo and Jabali, approaching and retreating from the river by turns, and forming in their meanderings some very rich bottom lands.

The Sabinas River rises among the branches which separate from the Sierra de Santa Ana (originating in a sort of dry gully that extends to the Sierras de Santa Rosa), entering at once into the great valley that here, almost at its commencement, has a breadth of nearly 8 leagues of plain, uninterrupted except by a few hills that cross it. These low lands are composed principally of vegetable clay loam, which possesses all the
for a rich yssssy,

The tributaries that enter the Sabinas River from the north are Santa Ana, which, proceeding from the basin of Mapimi in the Serranias del Carmen, brings at times great quantities of water; the springs of Chilepepin and Anderson, and the permanent waters of the Moras creek; on the south, the creeks called, respectively, Ojo Azul, Cañon and Palma, which latter forms the southern limit of the Nacimiento country. The river forms from Buena Vista to Rincon the division between the farms of the Nacimiento and those in the district of Santa Rosa, crosses these latter as far as the Pass of Oca, and thence divides the farms of San Juan and Soledad. The Sierra de Santa Rosa furnishes a great quantity of water. The numerous and abundant springs that originate in this range are sufficiently elevated to be easily utilized for irrigating purposes, and their force is of great importance for industrial works. The Santa Rosa spring, which rises half a league southwest of the village of Santa Rosa, forms at its rise a stream of water sufficient to irrigate the orchards and a large extent of farming country in its course. The Realitos, San Juan and Garzas springs form at their very commencement streams of sufficient quantity and force to operate all classes of machinery. All the low land on the south side of the river will average in its width about three and a half leagues, and is composed wholly of alluvial deposits, partly from the river and partly from the mountain freshets, which in time of rains are abundant. The soil is black-clay loam, varied in places by a mixture of sandy loam; so that it offers all that is required for agriculture.

Notwithstanding these very important natural elements, the valley is but little cultivated and is sparsely populated, which in part may be attributed to Indian invasions, which in times past were repeated with frequency and on a grand scale. There is no doubt that with an adequate immigration this section would soon be one of the most flourishing in the country. Mining, another important branch of industry, would thus also be given a corresponding impulse in this section, as may be seen from an especial study of the metallic formation of Santa Rosa.

The *Sierra de Santa Rosa* has occupied for centuries the attention of miners. It is in general composed of blue mountain lime, whose caps in the center of the Sierra, nearly horizontal, incline slightly to the southwest; while approaching the foot of the range it becomes more and more perpendicular until it assumes a vertical position.

Here in the plain it follows the carboniferous formation, rising equally at its sides and composed at its point of contact of a calcareous clayish slate, sandy carbonate and two layers of stone coal very close one to the other, of which one rises to the surface with a thickness of about four feet. The coal  and produces good coke. Then follow slate and

places, layers of coal run to the surface of the earth. The southern boundaries of the great coal basin appear to be the Sierras of Agua Nueva, Parras, Patos, Alamo, Encinas, Hermanas and the Mota, as well as the valleys of Saltillo, Patos and Parras, form parts of the coal field. The coal found in Parras is very bituminous, and probably belongs to a more modern formation.

This formation extends in a northern direction towards the basin of Mapimi, and between San José and Noche Buena, and San Antonio del Alamo and the Animas are found slate and sand carbonates. Near Presidio del Norte exists a bed of coal $1\frac{1}{2}$ yards in thickness. I do not know how far north this immense deposit of coal extends. Perhaps it will be developed as being a continuation of the northern Texas coal beds, in which case it would occupy a place among the largest coal fields in the world. Its more detailed study will be for science, and more especially for industry, one of transcendent interest.

I have said above that the Sabinas River, from the Pass of Oca, divides the lands belonging to the farming country of Soledad from those appertaining to San Juan. The great plain surrounding Soledad is bounded on the south by the high table land of the same name, which, beyond "Agujita de Arriba," extends to the river. And as it is a well-known fact that the pulverization of volcanic rocks produces the most fertile soil, we may presume that the portion of the valley south of the river is by far richer than the northern portion. Below the "Agujita de Arriba" the valley opens out gradually to a mile in width; thence it narrows again until it reaches the Mezquite, where the eastern point of the Soledad table land touches the river in a pointed, rocky ledge, extending a longitudinal distance of 3 leagues. The said plain communicates at the "Boquillas" with the valley of the Mezquite, which is bounded on the north by the Soledad table land, and on the south by that of Cacanapo, and has a width of 2 leagues, and extends to the foot of the "Piloncillos," the ranch of the Mezquite forming its western limit. The latter is situated on a lime hill, in which the petrifications characterize the period of stone-coal.

Below the jointure of the Mezquite valley begins the table land of Cacanapo, which forms the southern limit as far as the "Cañada Honda," and in some places approaching the river so closely that it divides the valley into two parts of half a league in width. The pass of the "Cañada Honda" creek is between the table lands of the Cacanapo and Jabali. Below its mouth the valley narrows suddenly, the river approaching little by little it touches the table land at the point of the Angostura. Here commence the farming lands of the Alamo. A straight line from the Angostura to the Jabali, and thence to the "Mesilla de Berroterar" divides the countries of the Alamo and Encinas from that of the Soledad. The portion of this farm which is located on the western bank of the river comprises the part of the valley

Berroteran," all of which rise in the Sierra de Santa Rosa. All its bed belongs to the stone-coal formation in which exists basalt, followed by conglomerate and carbonate of sandstone.

On the north side of the river lie the farming lands of San Juan, commencing at the Pass of Oca, extending west as far as the Piedras road, taking in all the lower part of the Alamo River. The valley of this river is separated from that of Sabinas, first, by a low range of hills, which soon ends, and both rivers course along the same wide plain to their place of union. This great plain has been but little cultivated, although nearly all of it, from its situation between two important rivers, is specially adapted to agricultural purposes. The Alamo River originates in the basin of Mapimi, formed by the Cerranias del Carmen, passes along the Bahia and receives many tributaries from the west. In the rainy season it carries a large amount of water, but during very dry weather its bed becomes dry, and it contains water only at intervals in its large water-holes. At a distance from its union with the Sabinas the valley is confined by the hills of the Pinal, Chata, Aire, Alejandro, and Retama, inclosing a site of half a league in width, affording commodious advantages for colonization. A straight line from the mouth of Blanco Creek to the Punta de Olguin separates it from the Alamo country.

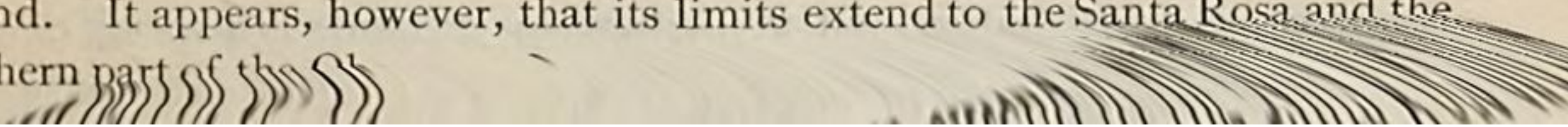
Below the ranch of San Felipe there is another beautiful plain, whose mesquites extend toward the east to the large creek of the river, and thence comes down another forest of mezquite, both following its course until reaching the Sabinas River after running along a table land, which only at considerable cost could be reduced to profitable cultivation. The circumstances are more favorable on the opposite or southern side of the river. Commencing at the Angostura, where the Jabali table land touches the river, it extends about a mile south and runs parallel to the river as far as the water-hole creek, embracing a plain of exceptional richness of soil. Another plain stretches on from the mouth of the last-named creek, which continues until the union of the two rivers, occupying a superficial area of $6\frac{1}{2}$ leagues in length by 1 in breadth; and as the river has various points at which the water may be easily diverted for irrigation, this tract of land is under all aspects well adapted to colonization on a large scale. It is not to be supposed that agriculture would here produce any good results without irrigation, for the reason that all this section lies in the region of an unvaried temperature; in other respects this region has a climate very favorable to the raising of wheat, corn, and cane, and its cultivators having all along dedicated themselves to the raising of cotton is good proof of its adaptability to this profitable branch of industry as well as to the raising of tobacco, and principally to the production of mezcal, which at the foot of

Even rice would thrive

without artificial irrigating; and the farms of the Nacimiento and Santa Rosa frequently receive copious showers of rain while the Soledad and San Juan, as well as all the lower country, are bathed in bright sunshine.

There the vegetation is of extraordinary growth and trees of high altitude are found. Beautiful cypress, walnut, and chestnut trees embellish both sides of the river, and the plains are covered with forests of mezquite. The hills are green with all classes of verdure, offering excellent pasture for cattle, horses, and sheep. Below San Juan and Soledad the forest groves diminish, particularly as they recede from the river, and their place is occupied by underbrush only, although the grass is abundant and stock thrives well. The lower part of the Salinas valley, from the union of both rivers to the Burro pass and the mouth of the Aura River, is bounded on the north by the Guates Mountains and a few ranges that separate this valley from the Sabinas valley and the table land of the Jabali; on the west it is bounded by the table land of the Chapote range, and a few adjoining hills with the Santa Cruz range and the table land of the Quebrada; on the southwest by the Burras range, from the pass of the Baluarte and that of Candela; and on the south by the Cartujanos table land, the great plain of Lampazos, and the Mesillas.

The greater part of the valley that occupies the northern side of the river is traversed by the Animas sand hills, which belong to the carbonic formation, and which, owing to the eccentric elevation from volcanic forces, have on the south side a steep descent, while on the north the descent is gradual, losing itself almost imperceptibly in the plain. This land is watered by the Delgado Creek, which, above the Alamo, joins the river. This large plain of more than 130,000 acres would all be tillable land if the water supply was sufficient, but at present only a small portion could be profitably cultivated. The general disposition of the ground renders it favorable to the employment of artesian wells, and with this auxiliary all the Delgado cañon would be adapted to agriculture. The dense ranges of mountains on the west, as far as the Sierra Madre, which form the dividing ridge between the two oceans, are for the most part of eruptive or volcanic origin. Elevated as they were by the powerful forces of subterraneous watery vapors, caused by the formation of caves that have later become filled by the infiltration of rain water. The gradual ascent from the valley of the Sabinas to the center or high ridge of the Sierra disposes a corresponding elevation of the valleys between the successive mountain ranges, like the steps of a staircase, so that these deposits of water must be much higher than those of the Sabinas, and easily accessible as they exist near the surface. The southern part of the valley or plain belongs to the Alamo, and the northern to the Encina farming lands, the dividing line being indistinctly drawn, nor is it possible to state exactly how far west the lands of the latter extend. It appears, however, that its limits extend to the Santa Rosa and the northern part of the



basin, and though its higher course is almost unknown, in consideration of the vast amount of water it carries, it is to be inferred that its tributary basin must be extensive. Its course divides the isolated ranges of the Santa Rosa and Obayos, and its little valley at its entrance to the large one of the Soledad reaches on the north the Berroteran hills, and on the south the Gachupines, both sets of hills being of carbonic sandstone, in which abound animal and vegetable fossils. Farther on the valley suddenly narrows and forms only a deep creek on the east until it reaches the foot of the Quebrada table land, 2 leagues distant; on the west, wind about various serpentine ranges of hills of slight elevation. Its crystal waters course along at first in a bed of solid lime rock and sandstone; but below the Gachupines it enters a limy permeable canal, and its waters are gradually lost until the lower part of the bed becomes entirely dry.

The Alamo lands and the Villa del Progreso have but little of their territory under cultivation and the greater part of the water is therefore not utilized. The southern part of the valley is not inferior to the northern in quality, but only a part of the land belongs to the Encinas and Alamo, the division being a right line from the Puerta de Guerra to Boca del Jabali. The Encinas farm is situated at a distance of a quarter of a league south of the river beside a large spring which with another that descends from the mountains is used to irrigate its fields. The Hermanas ranch comprehends both banks of the Sabinas River between the Burro and Burras passes. Its buildings, both dwellings and storehouses are situated on two hills of conic French form called Las Hermanas (the sisters) from which the ranch has taken its name. Half a league south is a hot spring at a point in the Obayos range. These thermal waters are in an elevated position, and on their appearance at the surface have a temperature of 33° Reaumur; that is, blood heat, and hold in solution a variety of mineral substances such as common salt, lime, etc., and though disagreeable to the taste are of great value for fertilizing purposes. All the fields in cultivation are on the west side of the river and comprise about 4,350 acres, but another square league of the land could easily be watered from the same source, sugar cane, wheat and corn are harvested in excellent condition, and there is no doubt that cotton and tobacco could be raised with good profits.

The Oballas range whose "divorcium aquarum" form part of the western limit, contains nearly in its center the famous pasture lands. Its plain surrounded on all sides by high perpendicular walls, is two and a half leagues in length by one in width, and is covered with succulent grasses. This valley has two narrow entrances, that, on the east known as the Puerto de Oballas, and the one on the west as Borregas. The eastern entrance, from its rocky nature, is only servicable as a bridle path, while the western has a good wagon

mountain in soil of the first quality, and only cultivators are wanting to plant them. The rest of the plain is fertile and level. The unpopulated portion known as Tapado, situated in the western margin of the Monclova River, which at a short distance joins the Sabinas, deserves particular mention for the richness of its soil and adaptability for colonization.

A right line from the Chorrera de la Rata on the western side of the high mountain to the north point of the Potrero de los Flores divides the Hermanas from the Mota ranch. The latter takes in the greater part of the valley which on the west reaches to the Gloria ranch, and on the east to that of Candela, being traversed at several places by hills that belong to the geological formation of the stone coal period, the same as the sandstone ranges of the Hormigas which rise gradually to a height of thousands of feet. The most curious of them being the Rata whose immense ledges rise separately and evenly to a height of some 4,000 feet, with a length of about $3\frac{1}{4}$ leagues by $1\frac{1}{2}$ in width. South of this at the foot of a small mountain, in the bed of a dry creek, is the crater of an active volcano, whence escape constantly sulphuric vapors. Its diameter is 5 yards and its depth has never been sounded, a stone dropped into it being twelve seconds in reaching the water that lies at the bottom. The Panuco, Guadalupe, Sierra Colorada and other ranges have dislocated and elevated the coal formation, and discovered metallic views; for instance, in the Panuco range is found a copper vein mixed with silver and gold, which at the surface is several yards in thickness.

These lands, in consequence of the scarcity of water are better adapted to stock raising than for agricultural purposes.

The wild maguey constitutes the principal richness of the valley, and the inhabitants of the Mota Tayunas, San Gabriel, Enramadas and adjoining ranches, occupy themselves chiefly in the production of brandy and mescal, and these plants spontaneously and without any cultivation whatever, produce such abundant crops that the wine factories in existence can not harvest the offerings of nature.

The extraction of the juice and the distillation of alcohol are practised by ancient and imperfect methods, therein causing a great waste that might be avoided by the employment of modern distilling apparatus; and by cultivating the maguey plant, numerous wine farms could be profitably established that would occupy a high place among those of the country.

The foregoing demonstrated in a fairly clear and evident manner, that the valleys and lands described are admirably adapted to purposes of colonization, while they are easily accessible by good and safe roads, and three important railroads already traverse the State. The Mexican International, Mexican National and the Mexican Central.

NOTABLE RIVERS IN THE STATE.

The Rio Bravo or Rio Grande bathes the northern

riser in

Sabinas, and passes along the northern border of the States of Chihuahua, Coahuila, and Tamaulipas, emptying its waters into the Gulf of Mexico.

The Nazas commences on the eastern side of the Sierra Madre mountains, west of the Partido del Oro, in the State of Durango, entering the State of Coahuila at its southwest corner. Its waters fertilize the land all the way from the starting point through the country of Santiago, Pasaquiaro, Nazas and Mapimi, till they reach and form the beautiful and famous Laguna de Parras, whose margins are constantly covered with water fowl. This river at an earlier date took a more northerly course after entering the State, forming at its termination the Laguna of Tlahualila, but in 1839 it changed its course to its present bed.

The Aguanabal River is in the Tresnillo range in the State of Zacatecas and runs in a northerly direction passing Rio Grande, Nieves, and San Juan de Guadalupe, until it reaches Viesca where it forms the Alamo Lake.

There are other rivers, though not of the importance of those mentioned, among which are the Sabinas and Nadadores before mentioned whose affluents are the Alamos and Salado. The Nadadores rises at the village of Sacramento.

CLIMATES OF THE STATE.

More than the strange configuration of the soil of the State, and its distance from the north pole towards the equator, its elevation above the sea level is that which really determines the variety of its climate, making localities of equal latitude, and separated only short distances from each other, of entirely distinct climates.

All the territory of the State is comprised without the temperate zone. The climates of the State may be classified under three general divisions: cold, temperate and hot.

The first in the order of classification are those in an altitude of 2,000 meters and upwards above the sea level, the second are those of an altitude of one to two thousand meters, and the third, those localities of less than 1,000 meters above the level of the sea.

THE MINERAL REGION OF THE STATE.

From the period of the Spanish Conquest began the development of the branch of mining, though with equal risks and difficulties, from the frequent incursions of the savages, who caused the mines that had been discovered and were being worked to become unpeopled and abandoned, producing necessarily thereby the ruin and decadence of an important source of wealth, upon which Coahuila has always largely depended.

Already in 1674 when the conquistador D. Antonio Balcáral effected his entrance into this province, we are told that vestiges of mineral workings

fallen houses, in one of which were a lot of broken rocks and two furnaces for smelting silver and other apparatus with signs of water conduits, etc., extending to a river running from south to north.

Another of the most ancient mines of the State is that of Potrerillos in the Monclova district.

Santa Rosa mines.—According to the archives existing in the village of Muzquiz, it is apparent that in very early times there was a period of great animation and activity in mining matters in that region. There are 22 abandoned mines that were discovered in the past century, whose names were as follows: *La mina del Rosario*, whose metals produced 12 ounces to the cargo, and was anciently considered the richest mine in that range. *La mina Vieja* which gave 6 ounces per cargo, *La Cruz* from 4 to 9, *San Alejo* 6, *Sacramento* 1 mark or 8 ounces, *Jesus Maria* 1 mark, *El Carmen* 7 ounces, *Guadalupe*, *San Miguel*, *Concepcion*, *San Alenogenes*, *San Nicholas*, *El Refugio*, *Moncaras*, *San José*, *Nogalitos*, *Las Higueras* and *San Bernardo*, producing from 3 to 20 ounces. During the present century have been discovered the mines of *El Pabellon*, *Santa Gertrudis*, *San Juan* and the one called *Bajo*.

According to the latest reports made to the State Department, relating to the mining region just mentioned, there are already 32 mines denounced and opening, and two sites for smelting works. Of those recently denounced in the *Alamo cañon* the principal ones are: *El Cuarzo Grande*, of Messrs Ord and Treviño, and *El Caballo Azul*, by Messrs Wilkinson, Owen and Swilling.

In the *Nogal cañon* the shaft has been sunk at the *Gwendolen* mine, denounced by Smith & Co., *La Fronteriza*, in which latter mine a deep shaft has been sunk and a tunnel excavated, through which rich ores are being extracted that have already attracted the attention of Americans through the scientific assays made of the metals. Mr. Proctor is also excavating a tunnel, and Messrs. Davis & Company possess a mine located between that of Mr. Proctor and the *Oso Grande*. In the veins of *Oso Grande* and the *Rubi* a shaft and tunnel are in operation.

Mr. Richard E. Chism, the mining engineer, has reported on this mineral district as follows:

Formation.—The formation of this district belongs to the Silurian period; it is of slate and limestone, and is constituted by beds that I believe have some 800 to 1,000 meters of thickness. The lime rock probably overlies granite, etc., of the primitive geological formation and is surrounded by plutonic rocks of those called brachytic and porphyritic.

Veins.—The beds of limestone form something like an irregular island in the midst of plutonic rocks; outside of this island, which is about 10,000 meters long by 3,000 wide, ore has not been found. The lime rock on the contrary is traversed by more than 20 veins that all present indications of silver, while some have it in large quantities. Besides the silver veins there are other veins or dikes of volcanic rock that do not contain silver. The silver veins have a general direction between south and west inclining more to the west, while the dikes take a more southerly direction, or between south and east so that the two systems of veins cross each other at various points. The veins of this region metallic as well as the others are true fissures well formed and with every indication of traversing the entire limestone bed, although it is possible that the

ored streaks of quartz, white spar and calcite. At the contact of the limestone and the volcanic rocks we have layers of iron, silver ore combined with red quartz, and the other minerals above mentioned, but they do not present the same regularity of structure as the other veins. The minerals are chloride and bromide of silver with a mixture of sulphide of the same metal in certain places. Of lead there has been discovered some carbonate and a little galena. As the ores named are all products of the decomposition of sulphides, there ought to be encountered in the depths of the veins a class of ores very different from those at the surface, and it may be possible that the greater part of the mines contain an abundance of lead metals in depth.

From the vegetation and other indications I suppose that the bottom of the valleys of this district is 2,000 meters above the sea level, while the summits of the mountain range must be 3,500 meters above the level of the sea.

It is said that the mean temperature of this mineral district is 61° Fahrenheit, with an agreeable and unvaried climate.

The following assays made of the metal of the district to which we refer give an exact idea of its wealth :

	Silver.	Gold.	Lead.	Copper.
	<i>Oz. per ton.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
1. Pinchbeck.....	16	Trace.....	.0	.0
2. Copper.....	1,892	0.60	.0	6.00
3. Copper, red oxide.....	383	0.10	.14	10.50
4. Carbonates, blue and black.....	1,455	0.10	.0	.07
5. Sulphides, black, blue, and dark.....	919	0.30	.78	.10
6. Carbonates, green and yellow.....	756	1.10	.25	9.40
7. Pearl-gray ore.....	1,112	1.70	15.80	.01
8. Black iron ore.....	117	Trace.....	5.80	.0

The preceding assay has been made by the Saint Louis Founding and Mining Company, and the following by a San Francisco, Cal., assayer :

Number.	Gold.	Value.	Silver.	Value.	Total value.
	<i>Per cent.</i>				
1.....	Trace.....		130 4.10	\$168.62	\$168.62
2.....	".....		26 2.10	33.84	33.87
3.....	1.10	\$2.07	1119 9.10	1,551.36	1,553.43
4.....	Trace.....		42 5.10	59.56	59.47
5.....	1.10	2.07	3096 3.10	4,003.30	4,005.37

Sierra de Ramirez. — This mining district has also had flourishing epochs, in which great quantities of ores have been extracted. The principal mines are La Esmeralda, La Calavera, La Providencia, San Acacio, and one anciently called San Juan de Valenciano. Some of these mines were objects of noisy and prolonged litigation and questions of dispute with the adjoining State of Durango.

Sierra Mojada. — This is the most modern mining region of the State, and for many years was unknown and ignored. By its present name this

killed in a skirmish with the enemy, and that from that time it has been known as the Sierra Mojada (wet mountain). In this rich range of minerals there are 32 mines in existence, known as the Esmeralda, San Salvador, La Parreña, San José, Jesus Maria, El Pabellon, Santa Elena, San Miguel, Dolores, La Victoria, La California, La Favorita, La Montaña de Dick, La Sultana, El Regalo, San Lorenzo, San Rafael, La Florida, La Huerfana, La Indita Mexicana, La Aurora, El Carmen, La Filipinas, Guillermo y David, San Dimas, La Huajuqueña, El Cinco de Mayo, San Agustin, San Pedro, San Luis, La Veta Rica, and El Siglo XIX. The ores discovered have a leadish, ironish, and copperish color; they produce from two to eight ounces to the cargo (300 pounds). The products from the year 1880 up to the month of April, 1882, were 29,329 marks, 234,632 ounces of silver, besides having extracted during the same time for the General Government 25,567 marks. The value of the silver extraction is estimated at more than a million dollars, but owing to the imperfect smelting it results with a loss of more than 3 per cent. The following is a scientific report of these metals:

The Sierra Mojada mining region is situated at about 60 leagues northwest of the town of Cuatro Cienegas, and according to barometric observations its level above the sea is about the same as that of Saltillo. The formation of the bed of the cañon or valley is a conglomerate of plutonic rocks, as granite and porphyry, belonging to the Permian period, which is well developed in the cañon of the Tres Rios, and distinguished by its reddish color. It is followed by a stratum of compact limestone, pertaining to the formation of magnesian limestone. Above this are deposited stratum of the Jurassic period, as demonstrated by the different petrifications or fossils encountered in them.

The Sierra Mojada range is from 6 to 7 leagues in length, from east to west, and at the place of the mines reaches an altitude of 300 meters (or about 1,000 feet), rising almost perpendicularly. At the foot of the Sierra, on the north side, exists a vein of ore half a league in length by 20 to 30 meters in width at the surface. The inclination of this vein is about 30 degrees south. On the western side of the vein are found great masses of red oxides of iron, with copperish metals, and in places green silver (chloride of silver). On the eastern side the character of the vein is more of limestone with iron ochre and magnesia, and lead ores predominate, particularly the carbonate of lead with silver ore, averaging from .5 to 12 ounces per cargo of 300 pounds and 20 to 20 per cent. of lead, etc.

There is no doubt that this mining section is of great importance, and in time new discoveries will be made as the country becomes settled.

The mineral localities herein described are the principal ones of the State, although there are besides mines of excellent ores at Candela, Arteaga, Ramos, Arispe, and others.

The Coal Region of Coahuila.

A brilliant perspective awaits this State in its rich and extensive beds of stone-coal, whose incipient development has already produced bountiful results. At the west of the village of San Juan de Sabinas, in the region of San Felipe

working for some time past and disposing of the coal to the Mexican International Railroad, for whose supply it is nearly sufficient. Another coal mine is being worked in Santa Rosa range, in the district of Monclova, and its products are sufficient for the smelting works of Cedral mines. Other coal mines are being worked near the towns of Juarez and Guerrero.

Mr. Henderson has assayed the coal of the San Felipe mine with the following results: 62.32 per cent. of permanent combustible, 19.22 per cent. of volatile, 18.88 per cent. of ashes, and 00.54 per cent. of water. The scientific observations of Mr. Koehler give an exact idea of the richness of this coal region and are herewith appended. Much has been said of the precious metals that abound in the mountains of Santa Rosa, Candela, Panuco, etc.; but the most important and valuable mineral in the future wealth of this country, the stone-coal, has been passed over in silence. At less than half a mile from the well-known silver mine of Cedral, situated $2\frac{1}{2}$ leagues southeast from Santa Rosa, appears two coal beds, one of which measures over 4 feet in thickness. The formation of this locality, composed of slate-clay, alternating with stratum of sandstone, is in the mountains of blue limestone. The depression at the foot of the mountains is perpendicular, separating itself more and more towards the valley of the Sabinas River. I shall try to give an idea of the extent of the coal formation in the northeast of Mexico. The point furthest north, where coal exists to my knowledge, is Presidio del Norte, on the Rio Grande, where the formation accompanied, according to the report of the mining engineer, Mr. Schucharat, is identical with that observed at Santa Rosa. The vein shown him for inspection, and which measured $1\frac{1}{2}$ yards in thickness. Another locality of vast extent is the great desert or plains of the Bolson de Mapimi, between San José de Piedras and Noche Buena, and although Mr. Schuchardt, in his rapid trip through this country, made no discovery of coal, he inclines to the belief of its existence there. Observing the continuance of these plains and of the ranges of mountains, the extension of the formation of coal towards the Rio Grande is apparent. When I passed through this section of the country, nearly all the mountains consist of metamorphic rocks, porphyric and serpentine, with their numerous transitions of one into the other. The metamorphic action may be observed in the coal formation. In some localities the beds of slatestone and sandstone are found in their natural state, but further on they commence to change and present porphyry of very different colors and composition, the beds preserving their original course and depth (about 15° S.W.). Small veins of spar limestone, of an opaque appearance in the adjoining beds, unaltered by slate-clay, have been transferred into beautiful transparent Iceland spar, with double refraction. Towards the southeast, 1 or 2 miles on the road from San Antonio de los Alamos to Santa Catarina, again cross for many miles hills of slate-coal not

rocks, as basalt, amygdaloid, etc. Further on to the southeast, near Monclova and the Mota, the slate and sandstone appear again, and it is said that in the table lands of the Hormigas the coal shows its existence, also at the south of the cañon, where Saltillo is situated. A slate similar to that of Santa Rosa rests on the base of blue limestone, near Parras. Here the limestone is more bituminous and manifests the vegetable texture. It is still to be determined if this carbon has any connection with that of the east, or if it is of a more recent origin and belongs to some other period. Less interrupted by the upheavals of the mountains, the formation of carbon extends from the Nacimiento, at the origin of the Sabinas River, to Piedras Negras, on the Rio Grande, following this river to Laredo and to the mouth of the Sabinas River, it is bounded on the south by the Patos mountain range. In many parts appear these carbon crests, and the samples that I had an opportunity to examine are of very good quality and produce excellent coke. The extent of this formation north of Piedras Negras is not known to me, but its connection with the great coal-bed of Texas is very probable, and the connecting link may be discovered later. A more careful and extensive examination would lead undoubtedly to the discovery of many new localities of coal deposits, at present unknown or concealed under deposits of alluvium. Before this nobody had made use of coal, although a feeble effort was made to smelt lead ores with a percentage of silver. Not knowing how to convert the coal into coke furnaces became clogged with uncalcinated coal, and good results were not obtained.

Near Monclova, in the mountain ranges of Candela, are found also in abundance silver, copper, iron, and other ores, also near Patos, which, with the assistance of the neighboring carbon, may some day be utilized. Magnetic iron is also found that exhibits polarizing qualities. In some veins are found, near Castaño, indications of having been worked at an earlier period, but it is not apparent with what object. Some of the numerous and extensive copper veins have been worked to a depth of several yards, on account of the gold it was supposed that they might contain, and in the crests are displayed carbonate of copper, pyrites of copper, etc., with granite for mould, that produce from 5 to 15 per cent. of copper. The granite is easily melted and forms at the same time a very good scoria.

Races of the State.

The mixture of Spaniards and indigenes is the predominant race throughout the State, next the Tlaxcaltecas, who were transplanted here from the ancient Republic of Tlaxcala by the first Spanish conquerors of the country, they were brought with them for the pacification and settlement of this country, known at that time as the Province of Nuevo Estremadura. Of those who came with Don Francisco Urdiñola, a portion founded the town of San Esteban, now a part of Saltillo, others founded Patos, Parras, Viesca, and other towns on the frontier. There exist
remnants of the

Political Division of the State.

The State of Coahuila is divided into five judicial districts, viz: Saltillo de Ramos Arispe, Parras de la Fuente, Viesca, Monclova de Muzquiz and Rio Grande de Zaragoza.

Saltillo.

This beautiful capital of the State of Coahuila is situated on the northern descent of the pendant of the table land known as the "Ojo de Agua." Its topographical situation forms a beautiful perspective from the stretch of country on the south and the exuberant vegetation in which it is always clothed. This table land is formed in the western branch of the Sierra Madre range, where it makes a descent on the northern side, which in some places is gradual, and in others is formed of hills and ranges, some of which reach a high elevation. At the foot of these hills reclines the city of Saltillo, with the "Ojo de Agua" table land for its southern horizon, on the east the Sierra Madre, on the west the Cerro del Pueblo, while on the north the view extends more than a hundred miles, in whose perspective rise multitudes of hills surrounding delightful valleys. The name Saltillo is supposed to be a corruption of an expression in the Chickimeco language signifying, "high land of many waters." And this signification gives a clear idea of the character of the location of the city. In effect the city of Saltillo, reclining peacefully above the gentle declivity on the south, appears to slumber amidst the murmur of the many rivulets formed by the springs above, whose crystal waters supply the numerous fountains of the public squares and private dwellings of the city. Besides the excellent quality of the water of these springs, that, called the "Ojo de Agua," from which the fountains are supplied is of a sufficient elevation to force the water entering the fount to rise to any height desired. Few populations possess the number of fountains that Saltillo enjoys, all of which are supplied by the "Ojo de Agua," leaving the rivulets of the other springs for the benefit of baths, washing, and irrigation, and water-power for the mills and factories of the city.

Settlement.

The original records of the founding of Saltillo can not be found in the archives of this city, they are supposed to exist in those of Durango, as the jurisdiction extended east as far as the valley of Saltillo, and comprised also that of Parras, so there are good reasons to conjecture that these interesting documents may be found in the archives of Durango, because of the strict obligation on the part of the conquerors to render an account of any new locality settled by them. In the year 1829 the Governor of the State, D. José María Viesca, endeavored with great diligence to discover the whereabouts

with energy, the Indians revolted, and in the contest that ensued he was severely wounded and was obliged to relinquish his conquests, and finally died of his wounds at Mazapil. After a few years D. Francisco de Urdiñola, son of the former, confirmed his father's enterprise, according to the instructions received from him before his death.

In the year 1575, D. Francisco de Urdiñola, jr., arrived at Saltillo on the 23d of July, and held conferences with the tribes of Huachichiles and Borrados, who inhabited this territory, having their principal residence in the mountain range on the east of the present site of the city. Peace was consummated on the 25th of the same month and year, when possession was taken of the place and the name Santiago del Saltillo was given it, in consequence, being the calendar day of that saint (Saint James). Urdiñola was accompanied by four hundred Tlaxcalteca families and sixty families of Spaniards, the principal of whom, after Urdiñola, being General D. Matias Aguirre, Cristobal Perez, Diego Montemayor, Diego Rodriguez, Alonzo R. Gonzalez, Pedro de Ubergo, Juan Navarro, Alberto Cantú, Santos Rojo, Mateo Perez, Martin Solis, Melchor Alvarez, Fortunato de Aguirre, Juan Perez, Jesus Hernandez, Alberto Fernandez, Francisco Martinez, Roderigo Perez, Alonzo Fernandez, and Pedro Gentil. The first cure Saltillo had was Rev. Urbaldo Cortez, who accompanied the first settlers.

Although the tribes of Huachichiles or Cuachichiles and Borrados lived in peace with their conquerors, still they did not unite with them, but remained separated until the year 1591, when a certain Enrique or Villamanrique made propositions to these Aborigines, and through Caldera, a Chichimeco chief of great influence, after many conferences with the old men and chiefs of the tribes, was successful in inducing them to adopt civil life and subject themselves to conditions proposed by the Spaniards. By the preceding it will be seen that Urdiñola, jr., was the founder of Saltillo and Pueblo de San Esteban, and at the same time the first conqueror of Coahuila. As before said, D. Santos Roja was one of the Spaniards who came to Saltillo with Urdiñola. He was a merchant and a devotedly religious man. His wife was Doña Beatrice de las Ruelas, of Mexico. From his personal property he constructed the chapel that forms part of the parrochial church building dedicated to the services and prayers for the dead, of which he was a devotee.

D. José Ma. Jove, who for several years was administrator of Patos, Bonanza, and Rosario, in the Parras district, had occasion to examine the archives of the Marquiz of Aguayo, at the instigation of the cure of Saltillo, who desired to investigate the founding of the city. He could not, however, discover any data that indicated the whereabouts of the document of settlement, ascertaining simply that D. Francisco de Urdiñola, jr., captain of Mazapil, organized the expedition for the conquest of territories subsequently known as Coahuila, the entire cost of the expedition being paid by himself. He brought into the country the

good pasturage and water. The following lands about Saltillo were distributed among the Spaniards who accompanied Urdiñola, and whose several residences received the names of their first owners. The slaves that he brought were sent to Patos, and the Tlaxcalteca Indians remained, a part of them, at Saltillo, founding the Pueblo de San Esteban, and the remainder were established at Parras.

Municipality of Saltillo.

Saltillo is bounded on the north by Ramos Arispe, on the east by Arteaga and the State of Nuevo Leon, on the south by the States of San Luis Potosi and Zacatecas, and on the west by the town of Patos. Its population is about 30,000 inhabitants. Its latitude is $25^{\circ} 25'$ N., and its longitude is $1^{\circ} 15'$ W. of the meridian of Mexico, while its altitude above the sea level is 1,597 meters, or about 5,200 feet, according to barometrical estimates by Mr. Miguel S. Maynes. —SALTILLO, MEXICO, *January 25, 1888.*

JOHN WOESSNER,
Consul.

LAND TENURE AND SUCCESSION LAWS OF SWITZERLAND.

It is certain there can be no better security for the stability of the institutions of a country than by enlisting a large number of the people in their support, by giving them a stake in the prosperity of the soil. There is no country in Europe where land possesses the great independence and where there is so wide a distribution of landownerships, as in Switzerland. Agricultural industrial education and facilities for the acquisition of land have produced skillful and thrifty cultivators, of small holdings with security of tenure, representing two thirds of the entire population. There are no primogeniture, copyhold, customary tenures and manorial rights, or other artificial obstacles to discourage its dispersion among small owners. No entails aggregating lands and tying them up so that no living person shall be full owner, but a mere *locum tenens* for some unborn child. No family settlements with "tenants in common in tail," with "cross-remainders" in tail, by means of which an estate is tied up till some tenant-in-tail obtains the age of twenty-one years, when he is able with the consent of his father who is tenant for life, to bar the entail with all the remainders, but as a rule when the dominion is thus acquired over the property, it is usually exercised in a re-settlement on the next generation. There is no feeling, that land was made to minister to the perpetual elevation of a privileged class, but a widespread and deep-rooted sentiment, as Turgot puts it, that "the earth belongs to the living, not to the dead," nor, it may be added, to the unborn. The

and dispersion not only have fair play but are

considerable influence on Swiss land tenure, by breaking up the larger properties—monastic, conventual, and private—which for some time had been steadily accumulating, and which now became gradually redistributed among a far greater number of proprietors. It is from this period, in fact, that the existing system of land tenure in Switzerland may be said really to date. The feudal rights exercised by certain Cantons over others, which took the form of land charges, were all swept away at the time of the construction of the Helvetic Republic in 1798. Since the commencement of the present century, and especially since the Constitutions of 1830 were framed, the land throughout the whole of Switzerland has been completely emancipated, the system of peasant proprietorship working side by side with that of small tenant farmers. The communal spirit, it is true, still prevails extensively with its various property rights in fee-simple and usufruct, for the common benefit of the members of the Commune, but does not interfere with the laws affording facilities for the acquisition and transfer of land. The general tendency of these laws is to discourage centralization or the accumulation of landed property in a few hands, the very idea of which is repugnant to the Swiss national character. And it is certain that this system, the subdivision of the soil among a multitude of small proprietors, for the most part energetic, industrious cultivators of their own holdings, is attended with the happiest results, and has contributed in no small degree towards maintaining the national spirit of independence and self-reliance, the happy and contented condition which so illustrates the country's peasant-proprietary, at once the strength and safety of the Republic.

There exists no Federal Land Code in Switzerland; in all matters relating to the tenure of property, each Canton is completely sovereign; but the Federal Code of Obligations adopted in 1881, contains twenty-five articles relating to the leases of land. This exercise of a very doubtful power by the general Government, was claimed at the time of its passage, by some of the best constitutional lawyers to be an interference in the ownership of the soil, and therein an infringement of the rights guaranteed to the cantons. The supporters of the measure met this objection with a very subtle and strained distinction as to the effect of the proposed law—holding that it merely had to do with the rights of persons. One in reading its provisions must concede they have a very intimate and important connection with landed property. However, the operation of the law has proven very satisfactory, and is now generally recognized as meeting desirable ends that could not otherwise be so efficiently done. It may be of interest to note some of its leading features. All contracts for leases are required to be written. If the farm be delivered to the tenant in a condition unsuitable for the purpose for which it was hired, the tenant may denounce the lease. If deteriorations or restrictions not mentioned in the covenant, take place, without the tenants fault, he may demand proportionate reduction of rent or denounce lease. if proper rectification is not made

right to retain the movables belonging to the farm, as security for the payment of his rent for the past and the current year. This shall not include effects which according to the laws in reference to debt and bankruptcy cannot be included in a forced execution. The lessor has the right to appeal to the authorities, to compel a tenant who wishes to leave the farm before paying his rent, to leave property behind him sufficient as a guaranty against non-payment of the same. A tenant cannot be relieved from rent when through his own fault, or even from any accident in which he was directly concerned, he is unable to enjoy the use or benefit of the lease. If implements, stock, etc., are included in the lease, each party must furnish the other with a detailed inventory duly signed, with an estimate of their value. The lessor must bear the expense of any repairs on a large scale which may become necessary during the lease, as soon as he receives notice of such from the tenant. The tenant must make a conscientious use of the land, according to the terms of the lease and especially to keep it in good state of cultivation—he cannot alter the existing mode of cultivation or cropping to the damage of the land or the injury of a subsequent lease—he must conform with all local laws and customs as to paths, foot-bridges, ditches, dykes, hedges, roofs, aqueducts, etc., and must replace all implements and tools of small value which may have become worn out. The tenant cannot underlet without consent of landlord. In absence of special agreement as to payment of rent, it must be paid according to the local customs, and in event of extraordinary accidents by which he loses a considerable portion of his year's produce, if in no way due to any fault on his part, and if not covered by insurance or taken into consideration in fixing the rent, he may demand a proportionate reduction. In the absence of agreement or prevailing customs, each party has the right to give the other notice, which in case of the land itself, must be at least six months before the 11th of November. With this notice, even in cases of long leases, where circumstances arise to render its continuance intolerable to either party, it may be terminated with a just indemnity to the other party; this indemnity, even when referred to the courts for adjustment, must not be less than one year's rent. If on the expiration of the lease, the tenant remains in possession with the landlord's knowledge and without his objection, the lease will continue in force from year to year, until the six months notice is given by one of the parties. When a tenant fails to pay his rent at the time it falls due, the lessor may give him notice that if not paid within sixty days, the lease will be cancelled—in such cases the tenant loses his right to the growing crops, but he must be reimbursed for the expenses incurred in their cultivation, to be credited on arrears of rent. The lessor has the right to cancel a lease where the tenant neglects to keep the farm in good order, or if after receiving notice, he fails to execute any work within the period designated by the landlord. In event of

with indemnity for any injury resulting to want of care on his part, and no compensation is due him for improvements merely the result of ordinary care. The tenant must leave on the land the straw and manure of the preceeding year—if however it exceeds what he received when taking possession, he can claim compensation for the difference. The outgoing tenant at the expiration of his lease, has the right to compensation for any increase on the original valuation of the farm which is the fruit of his outlay and labor. This is sometimes ascertained to a nicety by means of a system of chemical testing of the soil.

The full text of these provisions is remarkable for the patient and careful consideration of detail that marks Swiss federal legislation, leaving but little room for misunderstanding or dispute in construction and enforcement.

But it is to the cantonal civil codes we must look for the laws regulating land tenure proper in Switzerland. These codes appear to be derived from three distinct sources, corresponding with the ethnical character of the population, viz., the Roman, the old Germanic, and the Napoleonic codes. The cantons of Geneva, Neuchatel, and the western portion of the canton of Berne (known as the Jura-Bernois), have the Code Napoleon, it may be said in its entirety; the codes of Vaud, Fribourg, Valois, and Tessin are based on the old Roman law, harmonized in some features with the Code Napoleon; the cantons of St. Galle, Appenzell, Uri, Schwyz, Obwalden, Glarus, and Bale-Ville are still governed by ancient statutes or customs, without any defined codes; the remaining cantons, constituting what is known as German Switzerland, have their land laws framed on the old Germanic code, with an admixture of the Code Napoleon. There were no cantonal land codes previous to 1819—the oldest one, that of Vaud, dating from that year. To show the practical working and leading provisions of these codes it will be necessary to give a summary of those in a few of the representative cantons.

The canton of Berne, the most populous, and the seat of the political capital, has two separate codes—the western or Jura district having adopted the Code Napoleon in its entirety, while the other portion of the canton still uses the old Germanic code, with alterations and improvements grafted on to it. In both districts the acquisition and transfer of land is of the most simple character. The sale of land is absolutely free and unrestricted, the only formality consisting of a contract drawn up and signed by both parties, and deposited at the cantonal registry office. There is a small registration fee, which is divided between the canton and the commune. The largest land-owners hold from 150 to 200 acres; these are very exceptional, 40 to 50 acres being considered large farms, while from 5 to 15 acres are the most common. Once every ten years the land throughout the whole canton is valued for purposes of taxation. Only one-third of the landed property is at the absolute disposal of the testator, the remaining two-thirds being divided in equal portions among the children. The only way a testator may favor a child is to bequeath to him that portion (one-third) which he has at his disposal.

of all his property for her life, with no power to alienate or deal with it in any way, save with the consent of the Committee of Wards, a body to be found in every Bernese commune. Failing wife or children, the property is divided equally among the heirs at law, should there be no will disposing of the available one-third. There is an exception, not embodied in the code, but founded in an immemorial custom, which prevails in the extensive and fertile valley of the Emmenthal (canton of Berne), where the youngest son inherits by right all the landed property at the decease of both his parents, subject to an annual indemnity paid to his brothers and sisters, who in this way may be said to hold a primary mortgage on the land. It is this custom which has held together the comparatively large estates of 150 to 200 acres, above mentioned.

In the canton of Vaud the sale and acquisition of landed property is as unrestricted as in that of Berne. One-half of the property is at the disposal of the testator; the other must go to the children in equal proportions. Failing issue, and if the deceased died intestate and be unmarried or a widower, his brothers and sisters succeed to half of the property, and his parents to the other half. If none of these members of his family survive, the property is divided equally among the ascendants in the paternal and maternal line. In this canton, where the breeding and rearing of cattle forms so important an industry, certain legislation closely appertaining to the occupation of the soil is worthy of a passing notice. This is *cheptel*—a contract by which one party undertakes to supply another with a certain number of cattle to tend and feed under certain specified conditions. This “cheptel” is of various kinds. In one the hirer has the right to the milk, work, and manure of the cattle, the wool and increase being shared equally, the loss also equally divided. It is illegal for the two parties to enter into any contract by which the hirer undertakes to bear all losses. Then there is “*cheptel à moitié*” (partial)—where two owners of cattle who do not possess a sufficient number to lease them, each on his account, join together and lease their stock to a third party, sharing the profit and loss with him on the same conditions and terms as in the first described. The third class of “cheptel” is where the tenant farmer rents the landlord’s cattle in conjunction with the farm, on condition of his taking all risks, and that when the lease expires he shall leave behind him a herd of cattle of the same value as that at which they were originally estimated. All the profits from these cattle go to the farmer until the lease expires. The manure, however, belongs to the farm, and must be employed for its exclusive use. The leasing on *celpage* of cattle bears a close resemblance to the ordinary “cheptel,” only it is on a smaller scale, being usually practised by owners of one or two, instead of a large number of cows. In this case the hirer has only a right to the milk, and to the calves which may be born during the lease.

exceed a fourth part of the entire estate. If the heirs be parent he can dispose of one-half of the estate, or more by virtue of a legally authenticated assent of the latter. If the wife survive, she is entitled, in the absence of a marriage settlement, to two-thirds of the estate. A marriage settlement may entirely annul the operation of the community of property which otherwise prevails. In this case the entire estate of a deceased husband or wife falls to the heirs. Sons and daughters share alike. Brothers and sisters are regarded alike whether both or one of the parents are the same. In the absence of descendants, parents share equally as heirs; if one of the latter is deceased the survivor takes the whole. Descendants of a deceased heir who are within the fifth degree of consanguinity share equally the part which would have fallen to their ancestor. Illegitimate children inherit from the mother, but not from the father unless legitimated by marriage of the parents.

Canton of St. Galle: A testator, in case he leaves but one child, can dispose by will or otherwise of one-half of his property; if two children, only one-third; and if three or more, not more than one-fourth. In event of having no legal heirs he may dispose of three-fourths of his property, the remaining one-fourth passing to the canton. If the heirs be father, mother, or other near relatives, he is not permitted to dispose by will of more than one-half. If there are relatives beyond that and within the tenth degree he may dispose of two-thirds of his property. If the wife survives she is entitled to one-half of the estate; however, if there be children also then the wife takes only a child's part. Sons and daughters take alike, with this modification—the sons have the preference of the real estate; tools and implements, if they be mechanics; books or libraries, if they are professional men—for which, however, they must pay a fair price to the other heirs. Two per cent of all property disposed of by will goes to the canton. Any person eighteen years old and of disposing mind may make a will. Every will must be attested by three witnesses, two of whom must be able to write their names. A woman's property brought into the marriage remains her property, the interest only to be appropriated by the husband for the benefit of the family.

Canton of Zurich: No limitations as to right of testator to dispose of his property by will, except as to interest of surviving wife. When the wife survives she first is entitled to withdraw the property she brought into the marriage, the household furniture in case it does not exceed one-fourth of the net estate, and if there be children she takes the usufruct of one-half of the estate or the fee-simple of one-eighth; if there be no children, but parents of the deceased living, she takes the usufruct of the whole estate or fee-simple of one-fourth; if only grandparents living, the fee-simple of one-half and the usufruct of the other half. If the wife marries the usufruct is reduced one-half. As to sons and daughters, in the father's estate the sons have a preferred right to take the real estate with the appurtenances against payment of a moderate valuation.

ments, cattle, etc., without, however, any deduction from the actual value thereof. Sons take without compensation the paternal wardrobe, arms, outfit, bedding, and seal. Family records go to the oldest son without charge. The common paternal inheritance is divided equally among sons and daughters. In the maternal estate, the clothing, house linen, and washing utensils go to the daughters without charge; also the jewelry, valuables, and savings of the mother if they do not exceed in value five one-hundredths of the estate, any excess must be paid for by them. The common maternal inheritance is divided equally, but the sons have the preference of the real estate against payment of its full value.

In the canton of Geneva the Code Napoleon or Code Civil Français substantially exists, that canton having been the capital of the French Département des Léman from 1798 to 1814, when it joined the Swiss Confederation, becoming the twenty-second and last canton.

The notion of family co-proprietorship predominates in the German cantons and testamentary power is much limited. In 1865 the canton of Appenzell went so far as to decree that it was an anomaly that a free citizen who enacted laws for himself should be fettered as heretofore in his testamentary powers, and that he should have thenceforward the right to dispose by will of one-fiftieth of his property if he had children, and of one-twentieth if he had none. And in the Canton of Zurich, before the Bluntschli's code, those who had children were obliged to leave them all their property, and failing children, the relations of whatever degree, had a right to their legitimate share. In certain cantons, that of Glaris for instance, the consent of the heirs is necessary before the smallest legacy can be made. In the Canton of Midwalden, the question of the validity of a legacy is submitted to a jury, who are empowered to decide whether such legacy is just and in conformity with the position of the testator, the legatee, and the testator's children. Three German cantons, Schaffhausen, Thurgovie and the Grisons, which place restrictions on the free disposal of the inherited property, are much more liberal in the case of acquired property. In Southern Switzerland, except in the cantons of Fribourg and Valais, the law goes so far as absolutely to forbid special contracts made during lifetime with regard to succession, except in the case of husband and wife, so as to have the testamentary form free and untrammelled with regard to property which is at the disposal of the testator; but in fact no such thing as a law of entail is known in any of the cantons. Some of the canton laws evidenced an alarm at the infinitesimal subdivision of land, and Argovie, Thurgovie and Soleure have passed laws fixing the limit for subdivision at extent varying between 5,000 and 20,000 square feet. There is undoubtedly a growing tendency to facilitate rather than to restrict, the disposal by will of property in general, in view of the more extended move-
~~ment of the population and the consequent dispersal of families and the laws~~

dissimilarity in the legislation and practice of the various cantons. But through all the varying degrees, in almost every canton there is some limitation to parental freedom of bequest, intervening for the protection of the children—in some a distinction is drawn between goods and lands inherited and those acquired, but it is the same principle of the “legitime” as the legal portion of the children, one which the testator is not allowed to exercise powers of disposition, and under the term “children” by many codes are included descendants of whatever degree, who, however, take together as representatives of the stock from which they spring.

Switzerland situated in the very heart of Europe presents many striking contrasts to the institutions and customs that surround her, and in none more so than in her treatment of land as a source of national comfort and well-being, instead of as an instrument for maintaining family dignity. No sort of social distinction or political privilege is associated with its ownership, and the legal differences between real and personal property especially as regards the simple and inexpensive transfer being reduced to the smallest minimum that practical convenience will allow. The cultivator, who is generally the proprietor, is shorn by neither rent nor taxes, the land fulfills its duty and guarantees the workers a fair enjoyment of the produce. As for the security of the property, it should be tolerably well secured where two-thirds are owners. It is certainly the best security for anything to intrust the largest possible number of persons in its preservation and the smallest in its destruction. The households in Switzerland each with its little land are said to number nearly six hundred thousand, one-fifth of the population. Even in the cantons of the large cities it is estimated that nearly a twelfth part of the people live in the towns. As an instance of the minute subdivision of the land, there is a case reported of a cherrytree in the Bernese Oberland that was found to belong to seven different proprietors. “Three acres and a cow” are literally exemplified in Switzerland. It is a fortunate condition. No occupation is fitted to develop a morally as well as physically healthy race than husbandry—genuine husbandry when the tiller of the soil is at the same time the owner. Poets, historians and philosophers who love to dwell on the corrupted children of the towns and the charms of the simple virtues of the staunch ploughmen, would find their Utopia in Switzerland.

Blessed in not being a great Power and required to spend millions in the game of European diplomacy, her whole attention and ambition is directed to the welfare and advancement of her people. And trace up the solid sterling elements of Swiss peasant character, and their source will be found in the educative power of property, especially property in land, and the absence of that inequality which Matthew Arnold says, “materialises the upper class, vulgarises the middle class, and brutalises the lower.” The Swiss peasant has not only the responsibilities of a capitalist on a small scale, already a most important mental training to begin with, but he receives and has long

bound to know something of the laws and constitution of his country. He is accustomed to public business, to the interchange of ideas and to the give and take of civic life generally. He indeed inherits a certain amount of political education, as well as those qualities of foresight, thrift and sobriety for which he is so remarkable. His courtesy and intelligence would do credit to any class in any country. He works hard, perhaps fares hard, his bread may be black, his raiment scanty and his existence plodding, but he is a free man and independent, he has his home with its dignity and stimulus of ownership, and he is contented and cheerful. —BERNE, *March 1, 1888.*

BOYD WINCHESTER,
Consul General.

THE NATIONAL LIBRARY AT LIMA.

I venture to lay before you a brief abstract of a report recently published here regarding the condition of the celebrated National Library of Lima, which at one time held a most important, and indeed an exceptional position, from the value of the treasures it possessed. But during the period of the occupation of Lima by the victorious forces of Chili the general in command permitted the sacking and spoilation of that magnificent collection, allowing his soldiers to use the building as a barrack, and to dispose of its precious contents to satisfy their most trifling requirements. Manuscripts of inestimable literary value were afterwards found in the drinking shops and groceries, mutilated and used for wrapping paper, where they had been exchanged by the troopers for their supplies of rum and tobacco. Numbers of the most valuable treasures of the library were shipped to Chili to fill the shelves of private individuals and those of the national library at Santiago, and with great difficulty only a very limited portion of them has been recovered. Protests at the time were made against these depredations, the better feelings of the despoilers were appealed to in vain by neutrals at Lima, and the minister of the United States did all that was in his power to prevent the sacrilegious robbery; all to no result. When the conquerors left Lima the library, occupied as a barrack and military office, was almost in the condition of that of Alexandria after its wanton destruction. Since then the efforts made towards re-establishing it have met with much success. The Government, the municipality of Lima, and many private persons have been liberal and generous in their donations of money and books. The Government of the United States, through its different departments, especially the Smithsonian Institute, has contributed a large number of valuable volumes. The French Republic has also enriched the stores of the

have been effected with

ground amidst the burned shelves, the broken desks, and general ruin of the building. The only reminiscence of the former glory of the institution was in the portraits of the long line of viceroys, which the victors regarded as of little interest at home, and of no saleable value here. From the report, of which an abstract is enclosed, the flourishing condition of the library at present will be readily apparent. — CALLAO, *March 5, 1888.*

H. M. BRENT,
Consul.

Thirty days after the independence of Peru was proclaimed at Lima, on the 28th of August, 1821, General San Martin and his minister, Garcia del Rio, issued a decree establishing the National Library, and on the 17th of September, 1822, it was solemnly inaugurated, possessing then 11,256 volumes, of which 600 were donated by the university, the municipality and General San Martin. The basis of the library was that left by the Society of Jesus when its members were expelled from the domains of Spain, and which numbered over 8,000 volumes. This was soon augmented by a gift from Dr. Juentes Pacheco of 7,700 books, some of which were of great variety and value, and in 1830 the shelves contained 20,488 volumes in all. Steadily increasing under the able direction of such distinguished men as Davila-Condemarin, Vidal, Vigil and Odriozola the possessions of the library, after fifty-eight years of existence, were 56,127 volumes, when in March, 1881, the Chilian General Logas ordered that its treasures should be looted by his soldiery. The library possessed the rarest and most valuable editions of the Holy Bible, of the Divina Commedie and of Don Quiyote. Over 200 Elzevirs and 150 incunabula, dated up to 1591, established the library among learned and literary men as by far the most valuable in South America.

When the Chilian army of occupation retired from Lima in 1883, the Government of Peru named as director of a library which then existed but in name Don Ricardo Palma, one of the most erudite writers which Peru has produced, and whose poetical and quaint traditions of the early colonial days and of the stirring period of the Independence have carried his fame wherever the Spanish language is read and spoken. He found less than eight hundred volumes scattered throughout the building, on the floors and in the stalls, which the Chilian troopers had built out of the moth-eaten shelves of the library. Cart loads of books had been sent to Callao, and from there shipped to Chili, where they enrich the national libraries of that Republic. Thousands of valuable volumes and inestimable manuscripts had been disposed of by the soldiers to gratify their taste for Peruvian liquors and tobacco. Fortunately many of these works had fallen into the hands of appreciative persons, who only awaited the departure of the spoilers to return them to their legitimate owner, and Señor Don Ricardo Palma speedily acquired from this source nearly twelve thousand volumes which had been impressed with the seal of the library. His efforts were unwearying in seeking at home and abroad for further contributions to the reviving institution. Being a corresponding member of the Spanish Academy, he interested the potent directors of that society in his exertion, and soon by every steamer arriving at Callao came valuable contingents of books and publications generously taken from the stores of the foreign libraries and destined for their unfortunate sister. The Governments of France and of the United States were liberal in their gifts. On the shelves of the library are many of the official publications from Washington with superb maps and charts, which were most gratefully accepted. Chili was appealed to to restore her wrongly acquired spoil, but the request was not heartily responded to. Still by dint of great exertions, and with the basis of the 12,000 volumes, the former property of the institution, Señor Palma was enabled to formally open the library eight months after the commencement of his labors in July, 1884, with 27,894 volumes all of which had been generously donated or willingly restored. Now, the number of books reaches

BONDED WAREHOUSES IN CHINA.

GENERAL REGULATIONS FOR BONDING.

The Commissioner of Customs sent us yesterday the following regulations, which come in operation on the 1st of January.

The Chinese Government having assented in the Revised German Treaty to the experimental establishment of bonded warehouses at Shanghai, the following provisional regulations have been drawn up. They are divided into four sections, according as they effect —

1°, vessels; 2°, cargo; 3°, the custom house; 4°, the bonded warehouse,

1°. — *Rules for the Guidance of German Vessels.*

1. After arrival and consular report, the import manifests of German vessels are to be lodged with the customs.

2. When the consul's report has been received, the manifest handed in, and permits to land applied for and issued, the vessel will be allowed to discharge.

3. When import cargo has been discharged, export cargo shipped, and dues and duties paid, the customs clearance will be issued. The customs will enter on the clearance the amount of import duties paid on foreign goods and the number of packages of foreign goods bonded upon which duty has not been paid.

4. The rules regarding export duties, coast trade duties, and tonnage dues remain as before.

2°. — *Rules for the Guidance of Importers.*

5. A distinction is made between a vessel's import foreign cargo and her native cargo. While foreign goods may be bonded or not, at the importer's option, native goods will be treated as before — *i. e.*, released upon payment of duty — and will not be allowed to be placed in bond.

6. Foreign goods may, at the importer's option, be either treated as before — *i. e.*, pay duty and be released — or may be bonded. The importer must state on his import application — in addition to the description, number of packages, weight, and value of the goods — on which goods he wishes to pay duty and on which he wishes to defer payment, in order that the customs may know whether to issue a duty memo. or a bonding permit.

Local Rule 1. An application for general discharge permit will be held to be an application for importation on payment of duty.

7. The importer must in all cases obtain a bonding permit before landing his cargo and placing it in bond.

Local Rule 1. Goods for which a bonding permit is issued must be taken direct to the bonded warehouse.

8. If the importer wishes to take samples of goods placed in bond, he must first obtain a sample permit from the customs before opening the packages. The bonded warehouse keeper will, upon production of this sample permit, allow the packages to be opened and samples taken, and the original packages will then be closed in whatever way the importer and warehouse keeper may agree upon.

9. When the importer wishes his goods, or any portion of them, to be released from bond, he must supply the customs with a description of the goods, number of packages, weight, value, date of bonding, name of importing vessel, destination, name of exporting vessel, etc., when applying for duty memo., release permit, or shipping permit. Goods for sale in Shan-

Local Rule 1. Goods for which a permit to ship in bond (non-duty paid) or a permit to withdraw from bond for shipment is issued must, in case of failure of shipment, be taken direct to the customs jetty for examination; application to withdraw from bond for import must then be made for such shut-out cargo.

10. Goods removed from the bonded warehouse without a permit will be confiscated, and the proprietors of the bonded warehouse will be responsible for the amount of the duty leviable.

11. Twelve months are proposed as the limit during which goods may remain in bond. If not applied for by the importer at the expiration of that period, the proprietors of the bonded warehouse must pay the import duty and remove the goods elsewhere.

12. The insurance of bonded goods, warehouse charges, and indemnity for fire or loss, are matters to be arranged between the proprietors of the bonded warehouse and the importers, and do not concern the customs.

3°.—*Regulations to be Given Effect to by the Customs.*

13. Seeing that German vessels will arrive with cargo which is, and with cargo which is not, to be bonded, the customs must first receive the consular report and import manifest before issuing permits to discharge, etc.

14. On application from the importer to bond foreign goods, the customs will issue the bonding permit with the permit to land.

15. On application from the importer, the customs will issue a sample permit to open packages in bond for the purpose of taking samples.

16. When the importer desires to dispose of bonded goods in Shanghai, or to re-export them to a Yangtze Port, the customs will, upon application, issue a duty memo., and upon production of the receipt will grant a release permit, and, if required, a Yangtze export permit.

17. Upon application from the importer to re-export bonded goods to a treaty port, other than a Yangtze port, or to a foreign port, the customs will issue a release permit and an export permit.

18. The customs will enter on the clearance of each German vessel the amount of import duty paid, and the number of packages placed in bond on which payment of duty is deferred.

19. The form of bond to be entered into by the proprietors of the bonded warehouse, the books to be kept there, the arrangements for either permanently stationing customs officers at the warehouse or for periodical inspection, as well as the rule for the daily routine of work at the warehouse, will be decided by the Shanghai customs as circumstances require.

20. In the quarterly returns of revenue the duty paid on goods released from bond is to be entered in the return for the current quarter; and in the annual trade returns such goods are to be entered under their proper flag. Goods remaining in bond are to be treated, as regards these returns, as yet not imported.

4°.—*Rules to be Observed by the Proprietors of Bonded Warehouses.*

21. The proprietors of warehouses appointed by the Shanghai customs to store goods in bond must enter into bonds in which they bind themselves to observe all the regulations of the Shanghai customs, and engage that no goods shall enter the warehouse without a permit, and that, once in the warehouse, goods shall not be opened or released without the proper permit; and in the event of goods being so opened or released without permit, the said proprietors bind themselves to pay a fine of so many times the duty leviable on the goods concerned.

Local Rule 1. Bonded warehouses shall be exclusively reserved for the storage of bonded goods.

Local Rule 2. Warehouses now authorized by the Shanghai customs to store goods in bond are as follows, viz:

Warehouse No. 14 at the China Merchants' Steam Navigation Company's lower Hongkew wharf, for the storage of bonded cargo *ex* vessels moored at that wharf, and where arrangements will be made for the reception, landing, and storage of bonded goods, water-borne, from vessels not moored at that wharf.

The bonding of other warehouses will be made known to the public by a notification displayed at the custom house.

Local Rule 3. Each door of every bonded warehouse shall be marked in conspicuous letters with the word "bonded;" and each such door will be provided by the customs, but at the expense of the warehouse proprietor, with a second lock, the key of which shall remain in the hands of the customs officers.

22. The proprietors of bonded warehouses must keep books, the form of which will be determined by the customs, in which must be recorded particulars of all goods which enter and leave the warehouse, as well as full particulars of the opening of packages for the purposes of taking samples.

23. Custom officers, whether permanently stationed at the warehouse or coming for the purpose of inspection, shall at all times have access to, and be at liberty to examine, both books and cargo without hindrance on the part of the proprietors of the bonded warehouse.

24. Goods for which the importer has obtained a bonded permit will be checked on arrival at the bonded warehouse by the warehouse keeper in the presence of the customs officer before being stored. At the same time an entry will be made in the warehouse book, and the bonding permit will then be receipted and handed to the customs officer to be filed.

25. On the presentation by the importer of a sample permit to take samples, the bonded warehouse keeper must inform the customs officer, in order that both may be present when the packages are opened and the samples extracted. On the packages being re-closed, the warehouse keeper must make a full entry in the book kept for the purpose, and then hand the sample permit to the customs officer to be filed.

26. When the importer brings to the bonded warehouse a release permit for goods to be disposed of in Shanghai or re-exported to a Yangtze port, it will be the duty of the warehouse keeper to inform the custom officer, in order that both may personally see to the release of the goods. The warehouse keeper must at the same time enter the particulars in the prescribed duty-paid book, and then hand the release permit to the customs officer to be filed.

27. When ~~the~~ importer brings to the bonded warehouse a release permit for goods to be re-exported to a treaty port other than a Yangtze port, or to a foreign port, it will be the duty of the warehouse keeper to inform the customs officer, in order that both may personally see to the release of the goods. The warehouse keeper must at the same time enter the particulars in the prescribed re-export book, and then hand the release permit to the customs officer to be filed.

28. Twelve months is proposed as the limit during which goods may remain in bond. At the expiration of that period, if the importer has not applied for his goods, the proprietors of the bonded warehouse must pay the import duty and remove them elsewhere.

29. The storage and custody of goods in the bonded warehouse, warehouse charges, insurance, etc., are declared to be private matters to be arranged by the proprietors of the bonded warehouse, and do not concern the customs. The customs, however, are to be kept informed of the warehouse rules.

These regulations are provisional and subject to alteration, or cancellation, as the Shan-

IMPORTS OF KEROSENE INTO INDIA.

Imports of kerosene to British India for ten months ended January 31, 1888: From United States 21,554,536 gallons, valued at \$2,742,862; from Russia in Asia 2,857,269 gallons, valued at \$406,517; from other countries 122,696 gallons, valued at \$24,996. In view of the interest that now exists in Russian competition in the mineral oil trade of India, I thought the foregoing additional facts would be of value to American exporters of kerosene. If the values of American and Russian oils respectively, as above stated, are correctly given in the Government report from which I compile them, they show the important fact that Russian oil laid down in India costs over 14 cents per gallon, while American oil costs less than 13 cents; and yet the Russian article is admittedly inferior in quality and sells for materially less in this market than good American oil. — CALCUTTA, *March 10, 1888.*

B. F. BONHAM,
Consul-General.

URUGUAYAN WOOL.

Uruguayan wool is quoted in the markets of the world as of the very highest and finest class. Indeed, it is said here, that the sheep farmers of New Zealand and Australia, as also the finest Lincoln and merino shearers who visit Montevideo, admit that they are not able to produce such superior qualities of wool, especially at such small cost and in such abundance.

It is also said that these fine classes are the sorts especially demanded in the United States, and hence a large increase in the wool trade is anticipated.

The fact that Uruguayan wool is so fine is still more remarkable when it is considered that Argentine wool, produced just across the river, is unusually coarse and dirty. — MONTEVIDEO, *March 12, 1888.*

JOHN E. BACON,
Consul.

THE WORKING CLASSES OF BARMEN.

According to the latest census the population of the town of Barmen, which, next to Aix-la-Chapelle and Munich-Gladbach, employs the largest number of work people in the Rhineland and Westphalia, amounts to 109,000, of which 17,000 belong to the working classes. These work people are mainly engaged in textile factories and dye works, the smaller proportion in belt-twisting establishments, hard-yarn, button, and machine factories. The textile workers, constituting the large majority, have this advantage over all other workers in the Rhine provinces and Westphalia—they receive the highest wages. According to the tables of the Statistical Wage Report for the last quarter of 1887, the worker in Barmen receives an average wage of 195 marks per quarter year, against 130 marks in Münster (Westphalia), 156 marks in Munich-Gladbach, and 139 marks in Aix-la-Chapelle. This rate is high, inasmuch as nearly half of the workers in Barmen are of the

greater. Moreover, in many factories piece work is given to the operatives, so that, if capable and industrious, he has the opportunity of earning from 30 to 35 marks per week. It cannot be wondered at, therefore, that complete contentment prevails among the working classes of Barmen, and this contentment is still further heightened by the excellent relations existing between employers and employes. An extensive number of benevolent institutions, both public and private, prove how profoundly the employer has the well being of his working people at heart. There are in Barmen from forty to fifty factory invalid, saving, and annuity funds, the management of which is most carefully and generously conducted by manufacturers themselves, in union with their employes. These are quite apart from the insurance institutions required by law, in connection with which all concerned, workers included, vie with each other in fulfilling in the most friendly and efficient manner the duties required of them. The administration of the poor relief funds, the hospitals, orphanages, and homes for the aged is quite exemplary in Barmen.

The improvement in the condition of the building society, which had made remarkable progress in the previous year, was maintained in 1887. The demand for dwellings by the working people was highly satisfactory, and neither on the 1st of May nor on the 1st of November were there any unlet. The house seekers confined themselves, indeed, to hiring their dwellings, and no increase took place in the number of houses which were open for sale. Nevertheless the building society was enabled to substitute better lodgers for those who did not give entire satisfaction, the consequence being that would-be lodgers presented themselves in fairly large numbers. The number of working people's dwellings to be found in Barmen during the past year amounted to 180, against 157 at the close of the year 1886.

In the 16 schools for little children spread over the town the workingman is given an opportunity of securing a safe home for his children during his hours of labor. The warm interest which is taken in these institutions by the Barmen middle class, as well as the number of scholars in attendance, which last year amounted to nearly 2,400, are proofs of the great success which has attended this system of schools for little children for a considerable length of time. The Mutual Benefit Association, for the welfare of the community, and a number of other societies constantly direct their endeavors to an improvement of the condition of the working population, while several private institutions of some importance have the same object in view. It is clear that nowhere can the relations between employer and employed be of a more humane or peaceful character than in the Wupper Valley. This fact finds additional proof in the hearty and unsophistical expressions of sympathy which any joyous or sad event in the family life of the employer is certain to call forth. The Barmen manufacturer and man of business is known for his

and humanity—characteristics which are

years—without any claims other than those of their helplessness and poverty. The lengthy periods during which the worker remains in the service of one master prove that the former is also capable of recognizing and respecting the endeavors of his employer.

The following table shows the length of time during which the Barmen worker remains in the same employment in some of the largest branches of local industry.

Factory.	Length of service.										
	Less than 3 years.	Between 3 and 5.	Between 5 and 10.	Between 10 and 15.	Between 15 and 20.	Between 20 and 25.	Between 25 and 30.	Between 30 and 35.	Between 35 and 40.	Between 40 and 45.	Between 45 and 50.
<i>Ribbons, lace, and trimmings.</i>											
In one factory	{ Males	46	16	21	17	9	2	.....	.....	.....	.....
	{ Females	39	24	1	2	3	2	.....	.....	.....	.....
In a second.....	{ Males	10	6	.....	4	.....	.....	1	.....	.....	.....
	{ Females	15	10	.....	3	.....	.....	.....	1	.....	.....
In a third.....	{ Males	44	20	6	8	4	1	1	.....	.....	.....
	{ Females	44	14	5	3	.....	1	.....	.....	.....	.....
In a fourth (established 187 years).....	{ Males	170	40	17	.....	.....	.....	.....	.....	.....	.....
	{ Females	110	10	3	.....	.....	.....	.....	.....	.....	.....
In a fifth	Males	110	26	14	8	3	4	.....	.....	.....	.....
In a sixth.....	{ Males	10	8	20	28	5	7	.....	3	2	1
	{ Females	21	17	10	4	.....	.....	.....	.....	.....	1
<i>In a belt-twisting establishment.</i>											
In one establishment.....	{ Males	122	12	10	6	3	2	.....	.....	.....	.....
	{ Females	47	19	8	1	.....	.....	.....	.....	.....	.....
<i>Elastic India-rubber goods.</i>											
In one factory.....	{ Males	56	16	13	13	6	.....	.....	.....	.....	.....
	{ Females	28	8	2	5	.....	.....	.....	.....	.....	.....
In a second.....	Males	68	15	19	14	11	.....	.....	.....	.....	.....
<i>In a power weaving establishment.</i>											
In one factory.....	{ Males	26	4	16	17	7	6	1	1	.....	.....
	{ Females	104	20	18	8	2	.....	.....	.....	.....	.....
<i>Hand-yarn factories.</i>											
In one factory	{ Males	80	20	19	25	17	18	7	9	1	.....
	{ Females	103	39	31	14	18	4	3	6	1	.....
In a second.....	{ Males	15	14	16	7	6	.....	3	.....	.....	.....
	{ Females	26	12	11	5	.....	.....	.....	.....	.....	.....
In a third.....	Males	17	17	8	4	1	1	.....	.....	.....	.....
<i>Button factories.</i>											
In one factory	Males	105	16	17	15	16	.....	.....	.....	.....	.....
In a second.....	Males	18	6	23	13	8	.....	.....	.....	.....	.....
In a third.....	{ Males	7	2	2	1	5	4	6	.....	3	.....
	{ Females	2	1	1	1	1	.....	1	.....	1	.....
In a fourth	Males	130	50	12	8	.....	.....	.....	.....	.....	.....
<i>In a machine factory.</i>											
In one factory	Males	78	12	4	2	1	.....	9	.....	.....	.....
In a second.....	Males	59	29	3	8	4	1	.....	.....	.....	.....
<i>In a piece dye works.</i>											
In one establishment	Males	194	34	30	11	9	2	.....	.....	.....	.....

A Turkish-red yarn factory is found to have employed about thirty workers over five years, and several for more than thirty years.

It is seen from the above table that a large number of work people are employed for scores of years in factories of all branches, even of those which are most subject to the changes of fashion. This fact is all the more worthy of attention, inasmuch as the great changes of fashion, to which the industries of Barmen are peculiarly liable, actually entail a similar revolution in the occupations of the work people, and in the rate of their wages.

A very important indication of the general happiness of the working classes in Barmen may be detected in the report of the litigation which has taken place before the bar of the local commercial courts of justice. The number of cases which came up for trial was 419, which were distributed among the following branches of industry:

Ribbon manufacturers against master workers of house industry (belt twistors and master ribbon makers)	12	The latter against the former	145
The latter against the former	13	Hand workers against journeymen and assistants..	13
Manufacturers, merchants, etc., against factory workers, etc., (ribbon makers, belt twistors, dye finishers)	67	The latter against the former.....	165
		Master hand workers against apprentices.....	1
		The latter against the former	3
		Total	419

Of these the disputed points at issue were:

Illegal desertion from work	70	Non-payment of wages, and compensation for wrongful dismissal.....	17
Illegal dismissal from work	129	Non-payment of contribution to invalid fund.....	3
Non payment of wages.....	140	Circulation of libels in the filling of a workman's certificate	15
Non-return of advance and non-payment of compensation.....	7	Compensation for goods spoiled by work people....	2
Departure from terms of working contract.....	29	Protested cases	5
Departure from terms of wages contract.....	2		
Total.....			419

The above figures show in the clearest possible manner that in Barmen the smallest amount of litigation takes place in proportion to the extent of the working population. When, moreover, factory industry is alone considered and the differences which arise among hand workers themselves are left out of account, the results are even more favorable than they at first appear. Only 237 law suits fall to the share of the entire number of factory hands (over 20,000), than which a more satisfactory result could hardly be possible. Of course, there are certain exceptions, but on the whole the Barmen worker is credited with the qualities of skillfulness, sobriety, and industry, and although in his political opinions he is largely inclined to social democracy, the reason of this is principally to be found in the deep-seated differences which exist between labor and wages. Hatred or malice toward his employer are feelings totally unknown to the Barmen worker. His views result from a belief that social democracy constitutes a more powerful force for the improvement of his social position than anything else. Another reason why the

of industry, which give occupation to more than 16,000 work people. This estimate is entirely apart from house industry and all other branches, in which, unfortunately, no accurate statistics can be obtained.

It is in consequence of the universally excellent and friendly tone which characterizes the behavior of employers to employed, and *vice versa*, the first-rate wages, and conditions of living, etc., that the fixed conclusion may be come to that the situation of the laboring population in Barmen is the most satisfactory and the best in the whole of the Rhineland and Westphalia. — BARMEN, *March 15, 1888.*

JOSEPH FALKENBACH,
Consul.

PROPOSED CHINESE CONSULAR SERVICE.

I have the honor to forward herewith for your information a copy of a memorial* presented by the governor-general of the two Kuang provinces to the Emperor, concerning the establishment of consulates in the British, Dutch and Spanish colonies.

In 1886, at the recommendation of the governor-general, a commission had been sent by the Chinese Government to enquire into the condition of the Chinese residing in the colonies of Great Britain, the Netherlands and Spain in the Pacific and Indian oceans. In the enclosed memorial the results of this investigation are given. They may be summarized as follows:

In Manila there are over 50,000 Chinese carrying on a most thriving business, notwithstanding the animosity of the Spaniards and the impossibility for Chinese to obtain justice, the civil and military authorities conniving at the guilt of the criminals. The most extortionate taxes are moreover levied upon them, and on the Chinese having prepared a petition to be forwarded to the Spanish Government, the people united to have the whole Chinese population expelled from the island, and only desisted on the arrival of the Chinese commission.

At Singapore there are 150,000 Chinese who own four-fifths of all the real estate—exclusive of government property—in the island. At Malacca, Penang, Perak and Selangor there are large and wealthy Chinese settlements, and while the commission does not mention any vexatious measures or discrimination against the Chinese in these localities, still it appears that many deceptions are practiced by the coolie agencies on the laborers brought from or being sent back to China from these places.

In Java the condition of the Chinese was found to be distressing. Over 200,000 Chinese are living in the Dutch Indies, employers may maltreat them with impunity, excessive taxes are levied upon them, gambling is everywhere allowed among them, and many Chinese, it is stated, are forced to become naturalized as Dutch subjects. At Batavia, especially, does the lot of the Chinese appear to be

In Australia the commission found a large Chinese population, which tends to increase continually, notwithstanding the heavy poll-tax on all new arrivals, ranging from £10 to as high as £30.

The memorialist recommends that the Spanish Government be urged to authorize the establishment of a consulate-general at Manila, to which measure it has, until now, objected. The Chinese merchants of Manila are both willing and able to support a consular officer. "The first year only will it be necessary for the Government to advance any funds, and this will be repaid at the end of the year out of the fees collected. From the second year on no demand need be made on the national funds, but all the working expenses of the consulate, including the salaries of the officers, will be defrayed out of the fees."

He also recommended to establish a college at Manila, of which the consul-general shall be president, the funds of the same to be subscribed by the merchants, where the young Chinese may receive a national education. At Singapore it is desirable that the Chinese consul should have authority to act with the registrar-general for the prevention of the irregularities complained of.

At Rangoon it is desirable to establish a consulate, among the duties of which is mentioned the "regulation of frontier matters." Batavia is regarded as second in importance to Manila alone, and should, like the latter place, have a consul-general, and additional consulates may be established later on as that officer may judge expedient. The governor-general further recommends the establishment of a consulate-general for Australia at Sidney, as has been done by the United States Government. As to consular officers in the other localities in Australia and New Zealand, they may be taken from among the resident Chinese merchants without incurring any further expense.

The fees, by which it is expected to derive funds for the maintenance of the proposed consulates, are to come from registration, shipping, etc., "but should these prove inadequate to meet the expenses, the memorialist will raise the deficit by subscription among the merchants, upon whom official titles will be bestowed."

The foregoing document presents a number of features of great interest. Besides throwing light on the condition of the Chinese in foreign countries, and emphasizing their generally prosperous condition, notwithstanding the great disadvantages under which they labor, it furnishes us, incidentally, with a further proof of the unfitness, or dislike, of the present system of Government to adapt itself to the new condition of things brought about by the closer relations in which China has entered with foreign countries.

The minister-superintendent of northern trade, resident at Tientsin, *the consulates in Korea and Japan, and has*

consulates which the foregoing memorial contemplates, will be under the general supervision of the viceroy at Canton or the superintendent of southern trade, and he will exercise the same authority as his northern colleague in fixing regulations, salaries, etc., without being in anywise obliged to adopt those which he has fixed upon for the consulates under his supervision. — PEKING, *March 1888, 1.*

CHARLES DENBY.

THE WOOLEN INDUSTRIES OF BELGIUM.

The following table shows the movement of woolen thread and fabrics between Belgium and foreign countries for the month of December and the entire year of 1887:

	Importation.			Exportation.		
	1887.	1886.	1885.	1887.	1886.	1885.
	<i>Francs.</i>	<i>Francs.</i>	<i>Francs.</i>	<i>Kilograms.</i>	<i>Kilograms.</i>	<i>Kilog' ms.</i>
WOOLEN THRAED.						
December	68,380	67,420	70,090	1,363,150	1,638,210	879,090
Whole year.....	849,800	852,950	980,680	11,464,040	11,224,940	9,380,390
WOOLEN TISSUES.						
December	145,380	214,570	212,470	174,450	133,800	196,150
Whole year.....	2,842,360	3,365,620	3,002,930	1,436,020	1,370,400	1,439,940
HEAVY TISSUES.						
December	129,400	91,670	139,580	39,680	29,620	21,780
Whole year.....	1,686,920	1,748,370	1,901,580	227,730	255,420	214,410
LIGHT TISSUES.						
December	1,042,900	886,050	782,380	49,180	32,140	89,720
Whole year.....	15,851,060	15,022,760	17,043,450	502,470	464,700	895,900

The foregoing table suggests the following considerations:

Woolen yarn.—The amount of importations during 1887 did not vary much from the amount imported in 1886, the importations for 1886 being 852,950 kilograms, and for 1887, 849,800 kilograms. There was also no great difference in the proportions the different countries furnished, as is shown by the following table:

Country.	1887.	1886.	1885.
	<i>Kilograms.</i>	<i>Kilograms.</i>	<i>Kilograms.</i>
Germany.....	61,010	61,840	20,950
England.....	156,170	180,440	195,640
France.....	621,590	601,280	753,430
Other countries.....	11,030	9,395	10,660
Total.....	849,800	852,950	980,680

and combed wool thread, which is less expensive when purchased in France than at the home mills. It is not for its quality they purchase it abroad, for the manufacturers succeed in exporting part of their production; it is only a question of the kind, or of the price, which causes the manufacturers of Brabant and of Flanders, as well as those of Verviers, to make purchases abroad.

On the 849,900 kilograms imported in 1887 the customs received a duty of 222,033 francs. This duty weighs heavily on the manufacturers, especially as the competition in the foreign markets is growing more and more difficult. So say the manufacturers, and they demand *free trade*.

Exportation increased, yet nevertheless the year 1887 was one of the worst ever experienced by the wool spinners. Prices declined from the month of January to the month of December. As the consumers made use of the stocks they had accumulated in 1886, and purchased only for necessary wants, the spinners were obliged to restrain their production as much as possible. A great number of them ceased working at night, or worked only on certain days of the week, or reduced the number of hours of work. Hence a sensible reduction in the exportations was expected, and the contrary happens! How explain it?

The following table shows the exportations to the different countries:

Country.	1887.	1886.	1885.
	<i>Kilograms.</i>	<i>Kilograms.</i>	<i>Kilograms.</i>
Germany and Austria	3,487,620	2,928,640	2,922,740
England.....	7,488,680	7,460,500	5,416,580
France.....	219,220	527,170	555,920
Other countries.....	268,520	308,630	484,150
Total.....	11,469,040	11,224,940	9,379,390

The importations from Germany and Austria during 1887 were augmented 558,980 kilograms over those for 1886, and the importations from England only 28,180 kilograms. The imports from France show considerable diminution—from 527,170 kilograms in 1886 to 219,220 in 1887. There are two reasons for this result: First, the limited use of carded wool thread compared with the combed wool thread, (only an effect of fashion); and secondly, the extension of wool carding mills, especially in the north, a consequence of the heavy duties with which the foreign yarns are charged.

Woolen stuffs.—In the importation of cloths, cassimeres, and similars there is a reduction of 523,000 francs on an amount of 3,365,000 francs for 1886, which year bore the highest figures for a long series of years. In this diminution Germany loses 26,000 francs, France 43,000 francs, and England more than 400,000 francs. There is also a decline in the figures in the

The following table shows the exportation of cloth and similar goods to the countries named:

Country.	1887.	1886.	1885.
	<i>Kilograms.</i>	<i>Kilograms.</i>	<i>Kilograms.</i>
Germany	76,600	81,490	99,200
England.....	162,400	152,800	113,300
Brazil	32,500	49,600	78,200
United States.....	88,600	150,400	78,800
France	518,200	488,900	495,300
Netherlands	161,000	142,000	140,890
La Plata	124,600	85,400	109,800
Switzerland.....	76,000	58,500	81,500
Other countries.....	196,000	178,400	242,900

The following table shows the exportation of light tissues to the countries named:

Country.	1887.	1886.	1885.
	<i>Kilograms.</i>	<i>Kilograms.</i>	<i>Kilograms.</i>
Germany	23,150	12,470	11,090
England.....	40,780	21,390	19,250
Congo.....	20,320		
France	130,730	162,680	172,120
Hamburg.....	7,710	5,080	18,220
Italy	42,690	36,330	26,990
Netherlands	81,090	147,430	544,450
La Plata	34,140	21,740	18,860
Switzerland.....	12,300	15,240	14,070
Other countries	109,570	42,340	70,840

LIÉGE, *March 3, 1888.*

WM. S. PRESTON,
Consul.

UNION SUGAR BOILING WORKS.

From published information of the proceedings at the annual general meeting of the St. Croix Sugar Boiling Factory, held in this city at the close of last year, it would appear that the factory had received in the course of the year a fairly liberal supply of sugar cane, having been delivered about 92,250,000 pounds of cane. The works commenced on the 12th February and continued until the 2d July without any intermission. On an average about 1,000,000 pounds of cane were daily worked up, and the total product 40,200 bags or about 8,200,000 pounds of sugar.

Prices during the year have ruled very low, lower than in any previous year; and as the chief part of the factory's production had been disposed of some time back

surplus of about 100,000 kroners,* which will not be sufficient to cover the interest and 5 per cent. redemption of loan due to the Government. The losses for 1886 were 106,010 kroners, to which has to be added the unpaid interest and 5 per cent. due to the Government, making a total deficit of 252,499 kroners.

At the previous annual meeting it was specially brought to the notice of the shareholders that the ten years which contracts had been made with the sugar planters for the deliveries of cane, would expire at the close of the working year, and on application to the planters for a renewal of these contracts it was found that reliance could only be placed upon little more than half of the quantity required to keep the factory at full work. The directors lost no time in informing the Ministry of Finance that under these circumstances they would not be in a position to carry on these works, unless assistance was granted by the Treasury. The minister replied that he was entirely without authority to promise aid, and negotiations were subsequently entered upon for taking over the works by the Government. After a somewhat lengthened correspondence an offer was made to the Minister, that as full compensation for the dissolution of the company and the taking over of its works and rights by the Government, (subject, however, to the necessary grants being accorded by the chambers,) all of the outstanding coupons for the ten years ending with the working year of 1886-89, should be redeemed by the Government at the rate of 60 per cent. of the amount guaranteed by the Colonial Treasury, which would correspond with the amount offered in first instance by the Minister, viz: of 30 per cent. of the company's capital stock. — COPENHAGEN, *February 9, 1888.*

HENRY B. RYDER,
Consul.

PRISON STATISTICS OF DENMARK.

In the Ministerial Gazette there has lately been given some statistical matter relating to convict prisons, embracing a period of 25 years, from 1861 to 1885.

In Denmark there are at the present time but three convict establishments in which penal labor is enforced —

1. One at Christianshaven, capable of receiving 400 prisoners, which is exclusively set apart for female criminals, whether they may be sentenced to penal or corrective labor.

2. One at Vridsløselille, which can contain 400 prisoners, and wherein are confined all male criminals sentenced to house of correction labor, with the following exceptions, viz: (a) When they are above the age of sixty

without aid, or of supporting strict isolation or of taking part in the ordinary course of instruction.

3. One at Horseus, having room for 500 prisoners, and which receives all male criminals condemned to penal servitude, as also all male criminals sentenced to house of correction, who are not confined in the Vridsløselille establishment.

In the Danish convict prisons there is thus room for 1,300 prisoners in all. At the commencement of the period in question the number of prisoners was greatly in excess of these figures, in respect to which it should be remarked that by degrees, as the number of prisoners decreased, consequent upon the more lenient principles introduced under the new penal law of February 10, 1866, the number of prisons was reduced. One convict establishment in Copenhagen for 300 prisoners was abolished in 1871; and another in Viborg for 400 prisoners in 1875; a penal establishment in Odense capable of rooming 100 prisoners was closed in 1865.

The total number of prisoners at the beginning of the period in 1861 was 1,694, while at the close of the period in 1885 it was only 805, a decrease of about 52 per cent. This must not be taken as the result of diminution of crime in Denmark, but rather of the more lenient provisions of the penal law and the shorter terms of imprisonment for different classes of crime under the new penal law. The aggregate admission of new prisoners during the entire period has been 14,252, of which 11,201 were male and 3,051 females, distributed in periods as follows: In 1861-'65, with 19.96 per cent.; 1866-'70, with 20.64 per cent.; 1871-'75, with 17.48 per cent.; 1876-'80, with 20.33 per cent.; 1881-'85, with 21.59 per cent. While the increase in the first two and the last two periods has been pretty equal, that in the period of great commercial prosperity, 1871-'75, is seen to have been strikingly small.

The number of prisoners discharged during the same period has been 15,141, of which 11,944 were males and 3,197 females; the decrease in the several periods having been distributed as follows: In 1861-'65, with 18.92 per cent.; 1866-'70, with 22.56 per cent.; 1871-'75, with 19.27 per cent.; 1876-'80, with 18.79 per cent.; 1881-'85, with 20.46 per cent. The high percentage for 1866-'70 may be attributed in an indirect manner to the new penal law. This large release of prisoners being due to the large number of pardons granted in this period, inasmuch as the administrative authorities were desirous of extending the benefit of the new penal regulations to prisoners sentenced under the older and more severe law in all cases where their conduct in prison had been of a satisfactory character. The total number of pardons during the entire period were 1,027, half of which fell upon the five-year period of 1866-'70. During the entire period 560 deaths occurred among the prisoners, 26 being suicides. It would appear, however, that in the last two periods, 1876-'80 and 1881-'85, the death rate has tended to

ment in these penal prisons, that of theft is by far the most common, the cases of gross and simple theft constituting 70.23 per cent. of the whole list. When to this is added other offenses against property, such as receiving stolen articles, fraud, coining and forgery, they will together be found to amount to no less than 82.09 per cent. of the crime list. Incendiarism is credited with 5.24 per cent.; offences against public decency with 5.12 per cent.; crimes against the person, such as homicide, infanticide, criminal abortion, concealment of childbirth with 5.76 per cent. Of male prisoners 46.36 per cent. were sentenced for simple theft, and 26.05 per cent. for theft accompanied by violence; while of the female prisoners 56.21 per cent. for simple theft, and 9.64 per cent. for theft with violence; 11.41 per cent. of female prisoners are found to have been sentenced for acts of infanticide and concealment of childbirth.

The fluctuations which have taken place during the entire period in the various criminal offenses are not without interest. While the number of prisoners who had committed offenses against public authority in the first twenty years of the period only amounted in all to 38, during the last five years they have amounted to no less than 50. The number of prisoners convicted for perjury in the period of the last five years has been very small, only 10; while in the first twenty years there were sentenced no less than 103.

Offenses against good morals would appear to have considerably increased in that in 1861-'65 73 were imprisoned; in 1866-'70 127 were imprisoned; 1871-'75, 134; 1876-'80, 189; 1881-'85, 210, and it is specially crimes of rape and incest that have led to this increase. The crimes of infanticide, criminal abortion and concealment of childbirth have also been on the increase, as will be seen by the following table of sentences for such offenses, viz: In 1861-'65, 51; 1866-'70, 75; 1871-'75, 75; 1876-'80, 102; 1881-'85, 102.

For crimes of homicide and acts of violence against the person the numbers given are as follows, viz:

	Homicide.	Acts of violence.
In 1861-'65.....	33	45
In 1866-'70.....	60	34
In 1871-'75.....	34	34
In 1876-'80.....	34	49
In 1881-'85.....	37	53

And for theft—

	With violence.	Simple theft.
In 1861-'65.....	396	1,712
In 1866-'70.....	680	1,378
In 1871-'75.....	574	1,202
In 1876-'80.....	775	1,249
In 1881-'85.....	787	1,255

epidemic rage of incendiarism which showed itself in the Copenhagen district during the second period, and in the Veite district in the fifth period.

As regards the term of punishment there is shown by the statistical tables, as might be expected, a marked difference between the first five years on the one hand, when the older penal statutes were in use, and the following twenty years when the new penal law came into force. In the first-named period the average term of punishment of a prisoner was of 4.20 years, while in the last twenty years it has been of 2.04 years, the average term having thus been reduced by 52 per cent.

A research into the ages of the condemned prisoners shows a somewhat remarkable result, the following table denoting how many of each sex in the various stages take their share of every 100 prisoners:

	Male prisoners.	Female prisoners.
Below 15 years.....	63.64	36.30
From 15-20 years.....	81.01	17.99
From 20-25 years.....	80.82	19.18
From 25-30 years.....	79.92	20.08
From 30-40 years.....	77.90	22.10
From 40-50 years.....	75.36	24.64
From 50-60 years.....	75.02	24.98
Above 60 years.....	81.23	18.77

Discarding the periods of life under fifteen years and above sixty years, in which the numbers are relatively so small that they have but slight importance in a statistical point of view, the relative proportions at the different stages of the two sexes may be designated as follows: For male prisoners, the lower the age the greater the number; and for female prisoners, the greater the age the greater the number, while the period of life of 15-20 years is seen to give 4.56 male to 1 female prisoner. This proportion is seen to change regularly and step by step until with the period of life at 50-60 there are only to be found three males to one female prisoner. As regards the prisoner's seat of residence, the statistics point, as might be expected, to the very unfavorable position held by the capital, inasmuch as the ratio between the prisoners and the rest of the population in the 25-year period has been as follows: For Copenhagen, 1 to 63; for the provincial towns, 1 to 128; for the rural districts, 1 to 202; for the entire kingdom, 1 to 150.

When investigating the occupations of the prisoners, it is seen that the day laborers have contributed most largely to the male prisoners (37.20 per cent.); thereafter the various classes of artisans (24.50 per cent.), and next the class of men servants with 21.36 per cent. With respect to the female prisoners, nearly one-half thereof (43.66 per cent.) are to be found in the class of domestic servants. Among the class of craftsmen the blacksmiths, without question, are the most numerous, 399; butchers the fewest, 102. When taking, however, into account that in the kingdom are to be found a much larger number of blacksmiths than of butchers, namely about
as opposed to 333 1/2

Finally, in commenting upon the statistical information on the state of health of the prisoners confined in these penal prisons, the daily average of sick is seen to have been 18.49 per cent. male and 7.95 per cent. female; and as the average of prisoners during the whole period has been 898 males and 249 females this daily average of the sick list will be found to have been 2.06 per cent. of males and 3.19 per cent. of females. Still more striking will the proportions be found between males and females when examining how the sickness has ranged itself in the different epochs of the 25-year period. For every 100 prisoners the daily average on the sick list was as follows, viz:

	Male.	Female.
In 1861-'65.....	2.51	2.69
In 1866-'70.....	2.46	2.78
In 1871-'75.....	1.96	3.73
In 1876-'80.....	1.49	4.06
In 1881-'85.....	1.16	3.39

Sickness having thus been less prevalent among the male than the female prisoners an explanation of this must be found in the unfavorable sanitary condition to which the females are exposed, and that such is the case is plainly evident, for while Vridslöselille and Horseus penal prisons, which are new and isolated buildings, have little or nothing to be desired in a sanitary point of view, the conditions are seen to be totally different in the female convict prison at Christianshaven. This is an old building, although at the commencement of the 25-year period it was partially rebuilt and lies enclosed in one of the poorest quarters of this great city, close by a muddy canal, which, especially in the summer season, poisons the surrounding atmosphere. It cannot either fail of attracting attention that the variance in the bodily health of male and female prisoners took its beginning in the 1871-'75 period; that is to say, from the time when the Christianshaven penal prison became exclusively a prison for females. Up to 1870 this prison had also been partially used as a place of confinement for male prisoners as well; and about one-third of the female occupants before that date were confined in Viborg prison. There can therefore be scarcely any doubt but the sanitary conditions of Christianshaven prison are of an unfavorable character.—COPENHAGEN, *March 19, 1888.*

HENRY B. RYDER,
Consul.

PAPER MONEY IN PERU.

From my previous communications on this subject the Department has been made acquainted with the disappearance of government paper money in Peru as a purchasing power. The only employment remaining for it is in Peru as a purchasing power. The only employment remaining for it is in Peru as a purchasing power. The only employment remaining for it is in Peru as a purchasing power. The only employment remaining for it is in Peru as a purchasing power.

stated, is merely a reminiscence. Sufficient silver coin exists for ordinary business handling, for the purchase of market supplies, and general shopping. The mint at Lima, one of the finest and most complete establishments of its kind in America (modeled on that of Philadelphia), turns out a considerable amount of silver money, principally in pieces of 20 cents; but the bulk of the silver extracted from the mines is exported in the rough to Liverpool and Hamburg, where the producers and owners find it cheaper to refine it, and where it is necessary as a return remittance to Peru. Up to the year 1878 there was no emission of paper money made by the Government. All that was in circulation was issued by the banks at Lima, and the minor ones at Piura, Trujillo, and Arequipa. The notes of the Bank of Tacna only circulated in that locality and in Bolivia. At that period a threatening financial crisis set in, and from the previous demonetization of coin by the Government to assist the banks, the paper in circulation became practically irredeemable, and the value of that class of money issued by the banks fell greatly. From a power of purchasing exchange on London of 46 pence to the sol it declined to 19 pence. The Government then sought to avert the impending peril, and by a decree assumed the responsibility of redeeming the bank issue of paper money (about 18,000,000 soles), the banks in turn surrendering the credits they held against the state, and all the notes were called in to be stamped on the reverse with a legend to the effect that they were guaranteed by the Government. This did not improve the situation; little confidence was reposed in the ability of the Government to meet this new obligation, and the sudden influx of new money, thus improvised, into the treasury not only induced extravagance, but so captivated the Government that new emissions were resorted to on the part of the state, naturally decreasing the exchange value of the paper in use. Then, in 1879, came the war with Chili, and the necessities arising therefrom forced Congress to authorize still further issues, until the amount in circulation reached nearly 85,000,000 of soles, and the purchasing value of the paper sol fell to 6 pence sterling, when five or six years before it had ruled at 46 pence. Indeed, in the sixties, when Peru enjoyed her "flush times," with the available wealth of guano and nitrate and public works in progress, the notes issued by the Lima banks were at a premium over silver on account of the convenience and dispatch of handling, as well as from the accepted security of the guarantee.

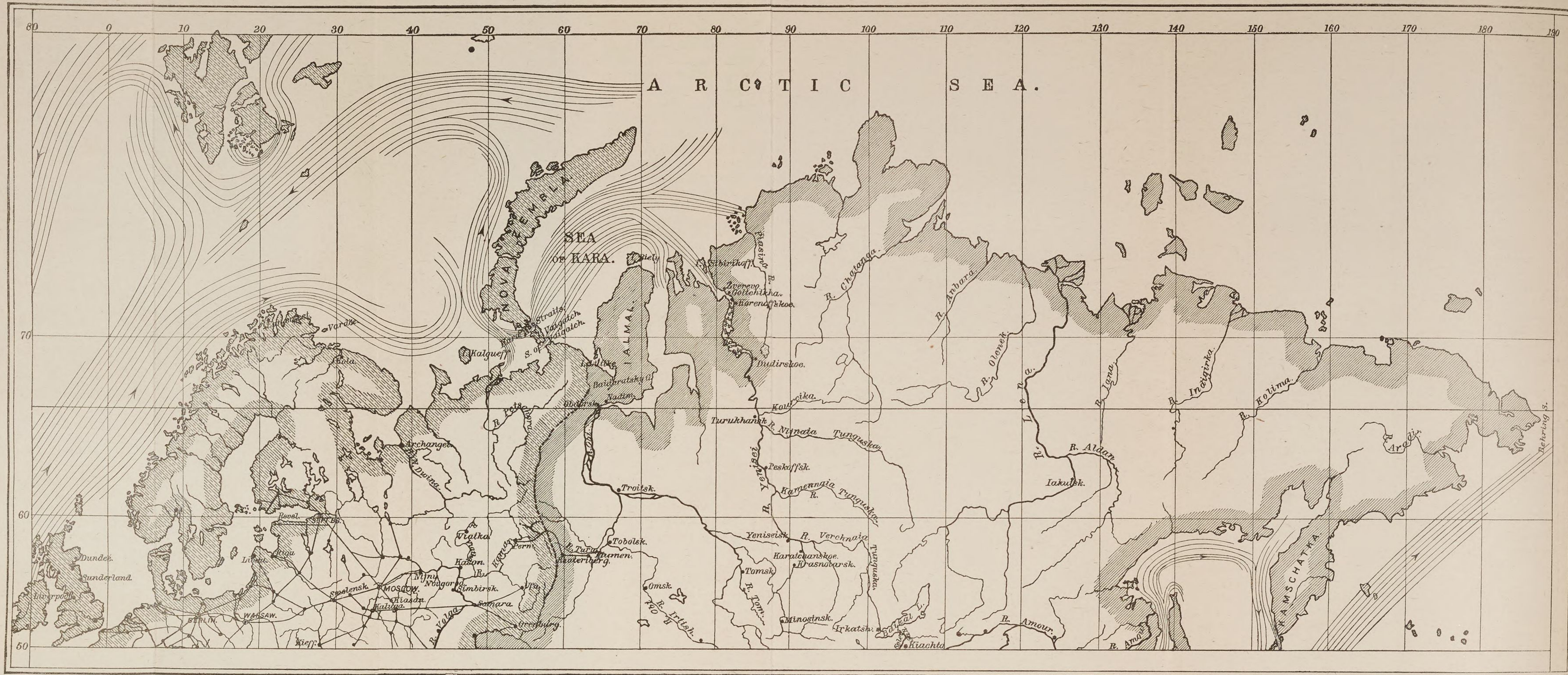
After the assumption of the circulation by the Government the banks commenced to lose their power and scope of action. They were, of course, prohibited from further emissions, and the six institutions of that class established with Peruvian capital closed their doors with more or less delay. Now there are only two banks in Peru, neither issuing paper money, one an English institution, and the other largely based on foreign capital. And by a law of the last congress Government is expressly restrained from any experiments in the way of placing more paper money before the public. During the Chilian occupation the paper money was contemptuously
victors, and

occasion the Chilians captured 10,000,000 of soles in notes on a steamer coming from Panama, and forced the people to receive them in payment of such provisions as were paid for, while their acceptance in return from the people was denied. These, of course, were heavy blows for the paper money; still, as it was necessary as a circulating medium, it continued to be received, constantly decreasing in value, until six months ago, when a paper sol was only exchangeable for $2\frac{1}{2}$ or 3 cents of a silver sol; or, in other words, it had declined to the equivalent of a penny sterling. And yet in 1874-'75 this same paper sol, then under the bank guarantee, was worth 46 pence and over. Then came the crash and collapse, which I have described in former dispatches. The Government made a stout battle to defend the paper money from annihilation, receiving it in payment of customs dues at the rate of 50 per cent. and at a value of 20 soles for the silver unit; but the confidence and patience of the people could bear the strain no longer, and the paper became a recollection.

The situation to-day is that the Government is responsible for the redemption of this money, and 2,000,000 of silver soles would be sufficient to redeem the 60,000,000 of paper calculated to be outstanding; but no one cares to conjecture when that redemption may be accomplished. Grievous injury has been inflicted by the inability of the Treasury to comply with its obligations, and there are many business houses and private individuals who are loaded down with inconvertible paper. The amount payable for duties—that is, received in part payment—is reduced to 5 per cent. of the dues collected, and is of infinitesimal importance.

The sudden change from paper to silver, leaving so many in embarrassed circumstances, caused naturally much loss and inconvenience. Prices in silver are fixed altogether out of proportion to those ruling in paper times. As a proof, I may cite the circumstance that six months ago 150 beeves were daily slaughtered at Lima for the public market and as necessary for the demand, while to-day less than 100 are sufficient to meet the requirements of the city, such is the rise in price from paper to silver. And in almost all other articles of like necessity the same disproportion in price is apparent. Only in vegetable produce, and some of the lower classes of flesh-bearing animals—swine, etc., (so considered here)—is the change in price moderate. No such proportionate increase has taken place in the wages and salaries paid; indeed, almost all of these were fixed in silver before the collapse came, but at a figure then in consonance with the value of paper. Rents have decreased in amount, and landed property is the general investment for money in Peru, so that the burden has not wholly fallen on the middle and working classes.

A decisive blow has been struck at the paper currency. It is now a thing of the past in this country, and no one expects to see it resuscitated.—



RICE AND SUGAR IN TURKEY.

Rice and sugar are largely imported from abroad, not being produced in this district. Rice is cultivated on a small scale in eastern Roumelia, and on a still smaller scale in the district of Broussa, Asia Minor, but is not worth mentioning as an article of export, as it is all consumed in the district. The importation of rice and sugar into this country is large, boiled rice being the national dish, and sugar plums being largely consumed by Turkish women and children. — CONSTANTINOPLE, *April 3, 1888.*

D. STAMATIADES,
Vice-Consul General.

THE NORTHEAST PASSAGE.

Capt. Joseph Wiggins, an Arctic explorer well known in England, who had, in August, 1887, taken the steamship *Phoenix* from Newcastle of Tyne round the North Cape and through the Kara Straits about 1,000 miles up the river Yenisei, and there left her for the winter; arrived in Moscow on the 2d of February last, accompanied by a gentleman interested in this expedition and six of the crew on their way to the United Kingdom.

This is the third voyage via the Northeast Passage that Captain Wiggins has successfully accomplished.

Several years ago he conceived the idea that a large and lucrative trade could be established between Europe and Eastern Siberia by way of the Sea of Kara and the two extensive rivers Obi* and Yenisei,† both of which penetrate for more than 2,500 miles into the interior of the country, approaching the borders of China.

A road to Japan, he believed, could also be opened across the Baikal Lake and by the rivers Selenga and Amour. Determined to make the attempt, he with great courage embarked upon this enterprise, and at his own expense chartered and fitted out the *Diana*, a small steamer of 104 tons, and sailed in her on the 3d of June, 1874, from Dundee, passed through the Straits of Vaigatch on the 27th of the same month, and proceeded along the southern shores of the Kara Sea, or Samoide coast, in from 10 to 11 fathoms of water. No ice was seen that could at all obstruct the passage. The run from Hamerfest to the Sea of Kara had been made under sail, without the aid of steam.

For several weeks he cruised about the Island of Lütke without any danger or difficulty; on landing the soil was found to be covered with verdure and flowers, great quantities of berries of various descriptions, and

*From Troitsk this mighty river runs a course of 2,700 miles and falls into the Obi Gulf, which is 400 miles long and from 70 to 80 miles wide.

†The Russians gives its length as 3,472 miles. At Yeniseisk it is rather more than 2 miles in width, at Goltchikha it expands like a lake, with a breadth of more than 40 miles. The depth of the river varies according to the season, but soundings

heaps of eider-down were seen in many places. The small lakes in the interior were found to swarm with eider-ducks, swans, and wild geese; no snow was visible, except on the tops of the Ural Mountains.

Immediately the center of the Sea of Kara got free of ice Captain Wiggins steered northwards, round Biely Island, as far as the mouth of the river Obi, which he reached on the 5th of August, but here he met strong gales and counter currents, and as the steamer sat deep in the water and had no speed in her, the original idea of running her up the Obi had to be abandoned.

After a short run further north Captain Wiggins satisfied himself that the sea was free of ice, and then turned southward, crossed the Gulf of Vaigatch, and made for Hamerfest, where he arrived within eight weeks of leaving Dundee, having in the meantime crossed the Sea of Kara and reached the mouth of the Obi, finding the sea open as far as the Yenisei, and might have gone up these rivers had circumstances not combined against it.

The *Diana* arrived at Dundee on the 25th of September, where Captain Wiggins left her, but determined to pursue his object, he purchased a small cutter called the *Whim*, not more than 45 feet long, 27 tons register, and sailed in this unsuitable craft straight for the Sea of Kara, but heavy gales and counter currents prevented him from making his way further than the Island of Kalgueff, the northeasterly gales almost blowing a hurricane, compelling him to turn back. After a somewhat rough voyage he reached Sunderland by the end of October, 1875.

In the summer of the following year, aided by some of his friends and admirers, he purchased the screw steamer *Thames*, and, within six weeks of leaving England, he safely circumnavigated the Sea of Kara and then made for the mouth of the Obi.

While in the Sea of Kara, in 1874, Captain Wiggins came to the conclusion that the gulf stream and equatorial currents must flow into the sea, and after a number of careful observations and nautical surveys he compiled the following table:

Date.	Locality of observation.	Eastern longi- tude.	Northern longi- tude.	Temperature of the atmosphere.		Temperature of the water on the surface.	Density.
				In the shade.	In the sun.		
July 5	.....	66° 35'	69° 25'	45°	65°	38°	4
11	Opposite the Island Sutke.....	.....	.....	37°	67°	35°	4
23	In a mass of drifting ice.....	66°	70° 10'	45°	.....	37°	1½
25	Stationary in a mass of ice.....	.....	.....	55°	.....	47°	1½
Aug. 27	.....	65° 10'	69° 54'	50°	.....	47°	5
28	Vaigatch Straits.....	.....	.....	45°	.....	50°	4
	.....	.....	70° 24'	43°	.....	43°	5
	.....	48°	.....	.....	.....	32°	5½

In 1876 he repeated his observations, with the results shown in the following table:

Date.	Locality of observation.	Eastern longi- tude.	Northern longi- tude.	Temperature of the atmosphere.		Temperature of the water on the surface.	Density.	Specific gravity.
				In the shade.	In the sun.			
Aug. 2	Vaigatch Straits.....			48°	.....	50°	.....	25
3	.....	61° 58'	70°	58°	.....	48½°	20	.....
9	.....	67° 40'	68° 50'	55°	90°	48°	20	.....
27	.....	65° 30'	69° 42'	60°	.....	49°	17	.....

Captain Wiggins is of opinion that these observations positively demonstrate that the Sea of Kara owes its temperature to the gulf stream and equatorial currents, and maintains that exactly similar observations taken the same year and at the same latitudes in Davis Strait and Eastern Greenland showed the temperature to be 1 to 2 degrees above freezing point, or 33 to 34 degrees.

On 2d of September, 1876, the *Thames* reached the mouth of the Obi, sailing all the time, no ice being met with. Here contrary winds prevented her from ascending the Obi, and having waited for a few days, and the wind not changing, she directed her course for the Yenisei. On the way many islands were sighted, all of them covered with verdure and alive with rein-deer. The steamer anchored among these islands for five days, lying as safely as in a port, although a strong hurricane was blowing all the time, but the water was perfectly smooth between the islands.

The course was then continued up the river Yenisei, a number of fine islands offering splendid harbors were also here met with. A light northerly breeze soon brought the vessel to the first village at the entrance of the Yenisei, where the roadstead forms a very safe harbor for ships to load in during the summer months. Entering the village, Captain Wiggins found it completely deserted and the huts without any roofs to them, a boiling-house, and a number of large vats scattered about the place bore evidence of having been used for extracting seal and walrus oil, no doubt by Russian fisherman who visit this place at certain intervals.

Captain Wiggins continued up the Yenisei, and for the first time saw the natives at a village called "Zverevo," which having passed he reached a church-village, "Korenoffskoe," higher up the river. Here the inhabitants offered to pilot the steamer to Doudinskoe, a village above the mouth of the Yenisei. After several days of hard labor, with the aid of the steam-launch, Captain Wiggins was fortunate enough to discover the only channel there was, with no less than 3 fathoms of water all the way of half a mile in length. Doudinskoe was soon reached, and a splendid channel discovered, with not less than 5 to 6 fathoms of water, here the captain heard of a small
an affluent

spring. This spot was reached on the 17th of October, and as ice was already forming, the ship was made fast with as little delay as possible.

On the 24th of November Captain Wiggins left his steamer and started on sledges for the town of Yeniseisk, a distance of about 600 miles, passing through some very beautiful scenery. Splendid forests of birch, pine, plane, cedar, spruce, alder, etc. The weather was clear but very cold, the thermometer registering as low as 40° below zero.

Yeniseisk* was reached in the middle of December, where Captain Wiggins met with every possible hospitality. This town is an important center of Siberian commerce, has many handsomely decorated houses and fine churches in the Oriental and Byzantine style. A number of wealthy merchants reside here who carry on a large trade in wheat, barley, oats, leather, tallow, tea, etc. Many of the gold-mine owners' houses are most luxuriously got up, some of them perfect palaces. It has a mixed population of Russians, Poles, Tartars, and Jews. The gold mines in this district are both numerous and extensive. There are also some copper and iron mines.

The next town of any importance reached on this route was Tiumen,† it is the principal center of the navigation on the Obi, and is a very busy town. Well built and handsomely fitted steamers, 300 feet long and of 300 horse power, are to be seen on the river, their machinery of the newest construction, and most of them built at Tiumen. There are also some splendid barges 200 to 300 feet long, carrying a cargo of 500 to 600 tons, at a draught of not more than 3 feet of water; several of these were in course of construction at the time.

From Tiumen the journey was continued on sledges to Ekaterineburg, the pass across the Ural Mountains, and thence to Nijni-Novgorod, altogether a distance of about 2,700 miles having been traversed on sledges. Nijni-Novgorod being connected by railway with Moscow and St. Petersburg the journey was no longer a difficult one, and London was reached on the 31st of January, 1877.

In the spring of 1877 Captain Wiggins returned overland to Siberia and down the Yenisei, intending to take the *Thames* back to England, but he only arrived to see her driven before the drifting ice until she became a perfect wreck, and he had once more to return by land.

THE STEAMSHIP WARKWORTH TO THE OBI IN 1878.

On the 1st of August, 1878, Captain Wiggins started from Liverpool in the steamer *Warkworth*, 340 tons net register, direct for Nadim, a fishing station at the mouth of the Obi, below Obdorska, where he landed about 500 tons of salt and other British merchandise, took in about 400 tons

of wheat, and returned to London, the whole journey occupying two months.*

After a number of unsuccessful attempts to form a company for the purpose of fitting out another expedition, and giving Captain Wiggins an opportunity of showing the advantages to be gained from his explorations, a few gentlemen of Newcastle and London formed themselves into a company and purchased a powerful and fast little screw steamer, called the *Phœnix*, 279 tons gross register, and after taking on board 200 tons of salt and a small cargo of miscellaneous goods she left the Tyne, on August 5, 1887, with a crew of twelve hands, in command of Captain Wiggins and accompanied by the managing director of the company, who had charge of her cargo.

The steamer put in Vardoe, in Norway, for the purpose of coaling, and proceeded direct for the Sea of Kara. She met with heavy gales which delayed her for a few days, but on the 20th of August she crossed the Straits of Kara, making straight for the Biely Island, and thence for the mouth of the Yenisei. She reached the latter on the 1st of September. No ice was met with the whole of the way, and the walrus hunters informed Captain Wiggins that this was an exceptionally open year.

What he saw, however, only convinced him that these seas should only be navigated by vessels especially constructed for that purpose, iron ships being quite unfit for it. The ship was greatly delayed by strong head winds, snow, and fogs.

On the 5th of September she reached Goltchikha, and there anchored for the night. The journey could now no longer be continued at night time. With the aid of the steam launch and the Russian fishermen, who readily offered to pilot the vessel from one station to the other, Doudinskoe was soon reached.

At a village higher up the river, called Sullivanovo, a suitable warehouse was found, and the *Phœnix* landed half her cargo of salt there, about 100 tons, which was accomplished with the ship's boats in five days, and lightened her to 8 feet, so that she could safely cross the Kamunno-Tunguska pass. The navigation now became extremely difficult and but slow progress was made, as the steamer had a current running at the rate of almost 10 miles an hour, dead against her. Fishermen who knew the deep parts of the river were employed to assist as pilots. The steam launch was sent ahead to take soundings, and found a channel; observations could not be taken owing to the fog, thus Captain Wiggins may be said to have felt his way up the river for a distance of about 1,000 miles. The country up the Yenisei is very pretty, except from the entrance of this river down to the Kara Sea, a part known as the Tundra, which is a barren and cheerless expanse.

Yenisusk was reached on Sunday, October 9, here the remainder of the cargo was landed and warehoused, and as the frost was rapidly setting in

*The *Neptune of Herby*

the *Phœnix* was put into her winter quarters, in a creek called the Siranka, where she could safely remain until the break up next spring.

After stopping two months at Yeniseisk Captain Wiggins, the managing director, and six of the crew of the *Phœnix*, proceeded on sledges to Krasnoïarsk. On the road some extensive gold mines were visited,* which appeared to be profitably worked.

The journey was then continued as far as Tiumen, where the party took train to Perm, there sledges were resumed until Nijni-Novgorod was reached and the journey assumed a more ordinary character.

Captain Wiggins appears to be as hopeful as ever of ultimate success. He maintains that the enormous cost of transport of merchandise to Siberia overland, which is, at present say from Moscow to Irkutsk, about \$80 per ton, must deviate a great quantity of the traffic to the new sea route as soon as a pretty regular communication is established, and that \$16 per ton from the United Kingdom to the Yenisei would leave a very handsome profit for the ship.

It is proposed that the ocean steamers should not proceed further than the mouth of the Yenisei, where a station and warehouses should be set up and small river steamers should carry the goods up the river and bring down grain for the sea-going steamers.

In the opinion of the Captain, a country so rich in gold, iron, copper, graphite, marble and coal; its vast forests of splendid timber (of enormous size), and extensive districts of arable land, capable of supplying the whole of western Europe with wheat, oats, barley, flax, etc., once placed within such easy access as a twelve days' journey from the more civilized and thickly-populated parts of Europe, cannot fail to open out an enormous field of enterprise so largely sought for.

One would naturally conclude that the abundance and great variety of fish in all the Siberian waters, the numerous feathered tribe upon the wing, and a healthy, bracing climate form a combination of nature's bounties sufficiently attractive to keep increasing the influx of immigrants into the country and supply the labor necessary for her development. Should such a measure appear at all desirable the Russian Government, so I am assured, is quite willing to remove her penal settlements to more reclusive parts.

In conclusion I must mention that Captain Wiggins was very much pleased with the permit he obtained from the proper authorities at St. Petersburg to land his cargo on the *Phœnix* free of duty; but this must not be looked upon as an exceptional case. Hitherto goods imported direct into Siberia have not been subjected to duty, the routes generally made use of are those from Hamburg and from Odessa to Vladivostok. †—Moscow, March

24,
26, 1888.

N. W. HORNSTEDT,

Consul.

of gold quartz which he had brought with

CEREALS IN SWEDEN.

Wheat and the products of wheat are hardly the staple food of the people in either country. Rye and oats furnish the principal food product of the people of the two kingdoms. Wheaten bread is used by certain classes in cities and larger villages, and such persons are numerically small compared with the great body of the people.

In the north of Sweden oats are used almost exclusively for bread, porridge, etc., while in other districts rye is used universally.

The statistics for 1887 are not yet compiled. In 1886, as I had the honor to inform you in my number 115, there were imported into this kingdom 32,830 tons of wheat and 38,550 tons of wheat flour. This latter came almost exclusively from Germany and Russia, while most of the wheat came from those two countries. There were no direct cargoes from the United States, and what American wheat was imported was sold at an English, German or Danish port. It would likewise be impossible to say how much, if any, American wheat entered into the composition of the 38,550 tons of flour manufactured abroad and sold into this kingdom in 1886.

The competition of no one country had much influence on the conclusions of the Diet in imposing the import tax. The raising of wheat has ceased to be profitable in Sweden, and has been so for years. Estate property has consequently fallen in value and ceased to be remunerative. The lower chamber of the Diet has a majority of estate owners, who, after a long struggle, and through the operation of a most absurd law governing elections, of which I have heretofore given you an account, found themselves this year with power to legislate for their own and suffering fellow-land owners' interest. They have exercised this power; they have exercised it against the sentiment of the people of the kingdom and of the throne. It may have the effect of temporarily increasing the value of estate property, but in a country where poverty and genteel impecuniosity are only divided by a thin partition it is difficult to understand how anything can be added to the expense of living with the expectation that the people can bear the increase thereof.

If Sweden could enact a discriminating import law I am inclined to think it would be directed against Russia. The United States has been used as the great example of prosperity under a protective system, and the Swedish protectionist has hoped the same policy may furnish like results in his barren, snow covered, ice bound kingdom with its sterile soil and inhospitable skies. Sweden has the two most aggressive competitors for trade in all commerce on her east and south—Russia and Germany. The one with her almost prohibitory duties, changing and shifting constantly, disturbing all calculations of the factor and of manufacture, the other with her low-priced products cheapening markets, have whip-sawed Sweden's trade until it is all but ruined.

These facts

There has been no wheat imported into the country since the duty was imposed, and will not be until navigation opens in May. The price will be increased to the extent of the duty. The price of wheat bread has risen to a sum a little more than the proportionate duty on wheat. There is no duty on bread, and much of the supply comes from Denmark, and yet it has increased in proportion to the increase of the raw material. — STOCKHOLM, *March 30, 1888.*

RUFUS MAGEE.

PROJECTED RAILROAD IN ASIA MINOR.

I submit some facts in relation to the projected railroad from Constantinople to Bagdad. The proposed line, as is shown by the accompanying map, starts from Ismid the present terminus of a short line of railroad connecting that town with Scutari, the Asiatic suburb of Constantinople. Its length is about 1,400 miles and the estimated cost £15,500,000. Throughout its length it traverses a country well populated, abounding in mineral resources and producing great quantities of grain.

The great advantages to the country, commercially and as a civilizing influence, of such a road are too obvious to need mention. It is sufficient to say that it would create a new Asia Minor, open to the trade of the world a vast territory now closed, totally change the character of the country and the people, and practically advance Turkey in Asia from, say, the sixteenth to the nineteenth century. The commercial world at large has a special interest in this project as it will, if carried out, shorten the distance between Europe and India by nine or ten days, and give a route to the East independent of the Suez Canal.

The following are the principal points along the proposed route taken in order: Between Ismid and Angora, a distance of some 150 miles, there are no towns of special importance, though the country is well settled. The country is mountainous and in character reminds one of Swiss scenery. In the vicinity of Boli there are extensive forests of pine and wild cherry. The villages are surrounded with fruit orchards. Some fifty miles before reaching Angora the woods disappear and are replaced by sandy, treeless tracks crossed by deep rough ravines.

Angora is a city of about 20,000 population. It is the center of the mohair trade, a business which up to within a few years was very flourishing, but has much declined of late. Were the transport problem once solved, so that machinery could be introduced and products exported, there is little doubt that the city would become an important manufacturing center, as it is a central market, water power is available, and there is an abundance of



yellow berries, gums, silk cocoons, rugs and carpets. The imports, mainly via Smyrna) of foreign goods, principally from France and England, amount to about £225,000 per annum. Fifty miles beyond Angora the proposed route crosses the Denek mountains where there are silver mines. In the surrounding villages the people are principally engaged in rug manufacturing. There are extensive deposits of niter in this region.

Youzgat, the next important point, is a walled city surrounded by high hills with precipitous sides. It has a population of 10,000 to 15,000. After passing the chain of hills a succession of plains is reached. These are of great fertility and are thickly covered with villages. There are some 900 villages in the Sandjak of Youzgat with a total population of some 340,000.

Kaisarieh. — A branch line from Youzgat to the important city of Kaisarieh would probably be built. The distance is about 100 miles. Kaisarieh has a population of 60,000 and is a city of much wealth. Its principal trade is in hides, yellow berries, wool and gum tragacanth. A line extending south through the Anti-Taurus Mountains via the Cilician Gates, 150 miles, would connect the proposed main line with the railroad between Mersine and Adena and give an outlet on the sea coast.

Sivas. — The next important point on the line is Sivas, a city of 40,000 inhabitants. As this city occupies an important strategical position commanding the approaches from the Russian and Persian frontiers, is the center of a very large grain district and is the natural starting point for a branch road to the Black Sea on the north, it will undoubtedly become one of the main points on the line. The trade of the city is entirely in the hands of the Armenians. It consists of hides, grain, rugs, wool, carpets, silver wire work, vegetable dyes, etc. East and northeast of Sivas is an extensive mineral district, the center of which is Kara Hizzar. This region abounds in argentiferous lead, coal, asbestos and marble. While the road will probably not run directly through this district it will be near enough to it to afford means for transportation of ore, and thus open up resources which are now useless. Continuing southeast from Sivas the route passes Arabkir, a thriving town of 29,000 inhabitants. The people are principally engaged in the manufacture of coarse cotton cloth from English yarn on hand looms. There are probably one thousand looms in use.

Egin is a place of some 20,000 inhabitants, and is renowned for its wine and the extensive fruit gardens which surround it.

Deverige. — There are extensive iron deposits here, but the mines are little worked.

Keban Medan, near the Euphrates River has silver and lead mines which have been worked intermittently for centuries, but with comparatively little profit, owing to the crude methods employed and the difficulties in transportation of ore.

Kharpoot. — At Kharpoot the projected line crosses the Euphrates. The city occupies a conical eminence at the terminations

with numerous villages, so that the city and its dependencies have a population of nearly 100,000. Below the eminence on which the city stands is an extensive plain, very fertile, 40 miles long and 4 to 6 wide.

Diarbekir is the next large city. It was formerly of great commercial importance doing a large trade with India by way of Bagdad and with Europe by way of Aleppo. It had an extensive silk industry. This has declined in late years, but the trade is still considerable in silk cocoons. These sell in Constantinople at 35 piasters per kilogram, equal to about 70 cents per pound. Diarbekir is an important military point, commanding as it does the approaches from Erzeroum and the transportation by the Tigris. The navigation of the Tigris begins here. Goods are floated down to Bagdad on rafts made of inflated skins. The products of this district are silk, cotton, grain, wine and dried fruits.

Mosool.—Following the valley of the Tigris the line reaches Mosool, a city of considerable size. The neighboring districts are possessed by wild tribes of Arabs, Koords and Turkomans. From Mosool to Bagdad the Tigris is a broad stream being enlarged by tributary waters of the upper and Tjab and other drainings from the mountains of Koordistan. The banks of the stream are covered with a thick jungle.

Kerkook Petroleum Springs.—On the eastern side of the Tigris, in the neighborhood of Kerkook, are numerous petroleum and naphtha springs which furnish employment for many of its people. The most abundant supply is obtained from the hills around, but a good deal is collected on the surface of the water in the ditches and stagnant pools. Some years ago this petroleum was largely used in Bagdad and Bussorah, but as the natives do not understand how to refine it properly, it has of late years been superceded by Russian and American oil. If the proper scientific methods were used in refining it, it is probable that the oil from this region might become of great commercial importance as it is inexhaustible in quantity, and even without a railroad transportation is easy by way of the Tigris and Persian Gulf to Bagdad, Bussorah, India and beyond. There is, it is said, no limit to the supply which might be procured from the hills about Kerkook and Arbela. These hills have been yielding bitumen and petroleum since the time of Alexander the Great, at least, in whose honor Arbela was illuminated after his great victory over the Persians.

The petroleum springs from almost every hollow in the hills. It is very greasy to the touch. As it rises from the earth it is of a brownish color with a greenish tinge. It quickly becomes opaque and hard in which state it is easily broken with a shining resinous fracture. The natives use it for fuel to burn limestone and also to cover boats with. The boats which are covered with this substance look as if they were covered with a thick hide. Mr. Grattan Geary, to whom I am indebted for these particulars, thus describes the principal spring a funnel-shaped hollow ten or twelve yards in diameter.

ing, its saline matter is left behind. Sometimes the water rises at intervals from the center in jets a foot and a half high and at others it bursts out in a considerable volume, raising the petroleum into huge bubbles which burst and let the imprisoned water out with a gurgling noise. The pit is very deep in the center, but its shallowness at the edges permits the people to stand in it up to their knees, while they with facility roll up the tenacious substance into masses which are carried away and placed to dry in the heat of the sun. When hardened it is used chiefly for fuel for the burning of limestone. The flames give a strong light and heat and it leaves a small earthy residue after it is burned. Notwithstanding the quantity that is constantly drawn off, the petroleum always continues at the same level and the Hittities say the supply in the pit is inexhaustible. The fluid skimmed off the water in the ditches and marshy places in the neighborhood of Kerkook is of a blackish green color and smells abominably."

Bagdad.—Bagdad, the terminus of the proposed line, is a city of some 80,000 people, the center of a vast outlying district and population, and the commercial emporium of Turkish Arabia. The population is very mixed, but Arabic is the language spoken by all, whether Arabs, Jews, Turks, Armenians, Chaldees or Europeans. On account of the holy tombs in the vicinity, the city is visited by tens of thousands of pilgrims from all parts of the Mohammedan world every year. One of the chief exports is wool. The trade has in late years declined owing to the competition with Australian wool. Bagdad wool is principally used in French looms for carpet manufacture. The quality varies with the breed of the sheep and the pastures in which they graze. That most esteemed is raised by the Beni-Lam and Montifik Arab tribes. It is of a fine silky fiber and elastic quality. From 30 to 40 per cent. is lost in washing. The quantity of grain raised about Bagdad and along the Persian Gulf is immense. At times so abundant is the supply and so inadequate the means for transportation that wheat is used for fuel on the coast of the Persian Gulf. Gall nuts and gum tragacanth are gathered on the surrounding hills. The soil is capable of producing unlimited quantities of cotton, but little is actually grown. Mulberry trees grow in abundance, and experiments in silk manufacture are reported to have resulted favorably. Rice of very good quality is produced. In late years the cultivation of sugar cane has been introduced from Egypt. From Bagdad navigation to the Persian Gulf and India is easy. Should the railroad be built, Bagdad, as the entrepôt for the trade between the east and the west, is sure to attain a commercial importance hardly second to any city in the east.

As to the probable needs of this great extent of country when opened up by the railroad, it may be said that they include everything. Practically nothing is produced in the manufacturing line now. With the advent of the railroad, with the new towns and cities that will spring up, the new resources and industries developed and especially with the new ideas and wants which civilization creates, there will be a new market and a constantly increasing demand for almost everything which Europe and

Character of the Population.—The population of Asia Minor is made up of a large number of diverse races, religions and languages. The extent to which this is the case may be judged from what is found in this province, Sivas. There is, in the first place, the broad distinction of the two creeds, Islam and Christian, a distinction which marks every detail of life, political and social. Then, among the minor divisions may be enumerated the so-called Turks, consisting of a few Osmanli and Seljuk Turks in the towns, and of the hardy, patient and temperate race which occupies the country from the anti-Taurus to the Black Sea, a race formed of the earlier inhabitants of Asia Minor who adopted Islam at the time of the conquest, and gradually losing their own dialects, acquired the language of, and finally became amalgamated with their conquerors. Besides these there are the Avshurs of Anti-Taurus of Turkoman origin, the Koords having their own language, the several divisions of the Circassians, each with its own dialect, the Tartars, Gypsies and the emigrants of late years from Georgia and Laz. Among the Christians, forming about one-third of the population, are the Armenians, Protestants, Catholics, Gregorians and Greeks, each sect cordially hating the others.

Speaking generally, the moslem part of the population is in the cities in some sort of Government employ, and in the country is engaged in farming or herding. The Christians or non-moslems are merchants, money changers, agents, land proprietors, agents or artizans. A Turkish (*i. e.*, moslem) merchant doing business on his own account is almost unknown and a Christian peasant tilling the soil with his own hands is extremely rare. It is hardly possible for any one who has not traveled in Asia Minor to realize the low position which the people occupy in the scale of civilization. Except in the larger towns education is almost unknown. Manufactures except of the simplest kind do not exist and in agriculture, in the construction of houses, in handicrafts, etc., there is little improvement on the primitive methods of the earliest ages.

Population of some of the towns and districts traversed by the proposed railroad from Constantinople to Bagdad:

Angora city.....	20,000	Keban Maden sandjak	6,000
Angora sandjak, including 5 towns and 1022 villages.....	583,000	Chemiskesek sandjak	16,000
Youzgat sandjak, including 898 villages.....	348,000	Peri sandjak.....	10,000
Sivas city.....	40,000	Argana Maden city.....	11,000
Sivas sandjak.....	103,000	Argana sandjak.....	180,000
Kharpoot city.....	12,000	Mosool and vicinity (male adults only).....	88,000
Kharpoot sandjak.....	81,000	Adjacent kazas.....	56,000
Arabkir sandjak.....	29,000	Kerkook sandjak.....	127,000
Egin sandjak	22,000	Bagdad and vicinity *.....	61,000
		Adjacent districts.....	64,000

SIVAS, TURKEY, *March 1, 1888.*

H. M. JEWETT,
Consul.

VILAYET OF BEIRUT.

The political subdivision within my Consular district, known under the Arabic name of Mutessarrifaté, (Turkish, Sanjack), arrondissement of Beirut, has, on the 10th of this month, been officially proclaimed an independent vilayet (province), with his excellency Ali Pasha as its governor-general, and with Beirut, under which appellation it is to be officially known, as the seat of the administrative offices.

The imperial firman solemnly read before a large assembly of notables and in the presence of an immense concourse of all classes of the population, declares the new vilayet to comprise —

I. The Mutessarrifiate (arrondissement) of Beirut, to which are subject the following caïmakamiates (Turkish, cazas) cantons: 1. Sidon, with the mudiriate (Turkish, nahié) dependency of Esh-Shekif. 2. Tyre (Sour), with the mudiriate of Tebuine. 3. Merj-Ayoun.

II. The mutessarrifiate of Tripoli, with the mudiriates of—*a*, Tartous; *b*, Arwad; *c*, Hazoor; *d*, Danineh; and the caïmakamiates of—1, Akar; 2, Safita; 3, Hossou, with the mudiriate of Wady Ennassara.

III. The mutessarrifiate of Latakia, with the mudiriate of Bayer Bojak, and the caïmakamiates of—1, Jabaleh; 2, Sahyoou; 3, Markab, with the mudiriates of *a*, Kadmous; *b*, Khwabi.

IV. The mutessarrifiate of Acca, with the mudiriate of Shefa Amer and the caïmakamiates of, 1, Haifa, with the mudiriate of Caseria; 2, Nasserat or Nazareth; 3, Tabaria or Tiberias.

V. The mutessarrifiate of El-Balka, with the following caïmakamiates: 1, Jenine; 2, Beni-Saab; 3, Jemaïne; 4, Salt, with the mudiriates of, *a*, Jizeh, and *b*, Maan.

These mutessarrifiates, with their respective subdivisions of caïmakamiates, have all been detached from the old vilayet of Syria, which, under its reconstructed form and with its governmental offices and officials unchanged and still at Damascus, consists now of the following remaining three mutessarrifiates, viz:

I. Damascus, with the caïmakamiates of—1, Baalbek; 2, El-Bekaa el-Aziz; 3, Wady El-Ajam; 4, Hasbaya; 5, Rashaya; 6, Douma; 7, Nebk or Jabal Kalamoon.

II. Hama, with the caïmakamiates of—1, Homs, with the mudiriates of, *a*, Kosseir, and *b*, Iky Kapuly; 2, Hamidieh; 3, Sabimieh.

III. Hauran, with the caïmakamiates of—1, Ajeloon; 2, Jabal Ed-Drieze, with the mudiriates of, *a*, Salkhad; *b*, Majdal; *c*, Shekba; *d*, Ara; *e*, Annan; *f*, Sala; *g*, Selim; 3, Koneitera, with the mudiriate of Mejdel-Shems; 4, Derha; 5, Bassar El-Harir.

Each vilayet or province within the Imperial Ottoman Empire is presided over by a vali or governor-general, whose attributes and duties embrace the financial and administrative affairs of the province—public instruction, public works, the police,

The Vali in his absence is replaced by an adjoint or assistant governor-general, known under the name of mouawin.

The mutessarrifs or governors are charged with the administrative and financial affairs, with the police and within the limits of their attributions, with the execution of civil and criminal sentences within their mutessarrifiates.

The caïmakams, or sub-governors, perform similar functions in the caïmakamates over which they are placed, while the duties of mudirs in the administrative affairs of the mudiriates, consist in giving publicity to the laws, regulations, orders and prescriptions of the government, etc.

Villages situated within the circumspection of a mudirate are presided over by mukhtars, who receive their orders, and are directly responsible to their superiors, the mudirs.

Great expectations are entertained of the new vilayet, and the advantages of this new political division must be at once manifest. It comprises the most important and prosperous districts bordering on the Mediterranean sea, with such populous cities and ports as Latakia, Tripoli, Beirut, Sidon, Acca and Haifa, representing all the commerce and wealth of the old vilayet of Syria and much of its industry.

The new governor-general is spoken of as a man of high and rare accomplishments, and of irreproachable integrity and character.

The vilayets of Adana and Aleppo and the government general of Mount Lebanon, with a Christian governor-general at its head, complete the list of provinces over which the jurisdiction of the Beirut consulate extends.—
BEIRUT, *March 15, 1888.*

ERHARD BISSINGER,

Consul.

CHILIAN LOCOMOTIVES.

I have referred incidentally to the building in Chili of certain locomotive engines and cars for the State railways. I had lately the satisfaction of visiting and inspecting, unofficially, of course, the extensive works of the contractors for the 6 locomotives, Messrs Lever, Murphy and Company, at Caleta Abarca, about four miles from this port. Mr. Lever is an Englishman, though formerly a resident of San Francisco. The firm have large capital, been long established, and have done a great deal of work in repairs on United States vessels of war.

The wages of their employés, about 450 in number (some 70 per cent. of native birth, the others English, Scotch and Irish) run as high as \$7, Chili money, (nearly \$4 gold) per day. The locomotives (two still in the shops in a forward state, the four others contracted for having been delivered, the first in December last,) are entirely constructed here with the exception of English manufacture. The contract price was \$40,-

These cylinders are relatively larger than ours, 17 x 24. Certainly the American engine is much the better adapted to the sharp curves of those mountain roads.

The machinery used by the constructors for this and other of their metal work is English, that for wood working from the United States. Their steel is imported from England, pig-iron for castings from Scotland. Through the kindness of Captain Saukey, an Englishman, but holding the appointment in the Chilian Naval Service of Inspector General of Machinery, I had the opportunity of inspecting the new steel boilers in construction at the same works for the Chilian steam crovette "*Pilcomays*" a wooden vessel built in England, captured from Peru in the late war. The contract price for these boilers (2) is \$52,000 paper currency, about \$27,000 gold. — VALPARAISO, CHILI, *February 29, 1888.*

JAS. W. ROMEYN,
Consul.

MINE LABOR IN BRITISH COLUMBIA.

There is a division here as to employment of Chinese even among the miners, as many of them who are paid by the ton of coal that they mine, and sometimes realize \$4 and even \$5 per day, employ Chinese at \$1 or \$1.25 per day to shovel and load vans, and sometimes even as tampers, they, the white miners, performing but little heavy labor themselves.

The mining regulation laws of the province are excellent and thorough, but under this pressure they are being considered by the legislative assembly (still in session) for amendment, as during the debate recently Mr. Dunsmuir gave some of the causes tending to produce explosion in the mines, showing the careless and reckless handling of explosives by the white miners. The contest is mainly over the amendment excluding Chinese from employment in the mines. Notwithstanding the existing depression at Nanaimo and vicinity the coal fields of the island are being explored and new mines developed. Mr. Dunsmuir is now opening a mine some 45 miles north of Nanaimo.

The "*Colonist*" of the 29th ultimo reports that Dr. Griffin, of London, England, has bonded 2,727 acres of the mining property held by Mr. Bate, of Nanaimo, and others, preliminary to placing it on the market with a view of taking out coal by a company. The article further states that the tract is contiguous to the finest mineral and coal deposits in this island.

A considerable party of Belgians arrived here yesterday, and under charge of Paul Watelet, Belgian agent-general de l'emigration au Canada, proceeded to Wellington and are now working in Dunsmuir's mines. There are 18 in the party, making 80 Belgians now employed there.

These troubles have greatly enhanced the price of coal, which until recently has been sold at retail here at \$15 per ton of 2,000 pounds.

Of the Bauff anthracite coal some 27,000 tons are now waiting shipment at Vancouver, as per press report. Freight rates are high, and the demoralization among seamen great. — VICTORIA, BRITISH COLUMBIA. *April 2, 1888*

SALT IN THE BAHAMAS.

The legislature of this colony has just passed a bill, which has been signed by the governor, by which salt has been placed upon the list of articles to be imported into this colony free of duty. This action has been taken in order to place this colony in a position to enjoy the privilege of having its salt entered free of duty into the United States, provided some action is taken by the United States. This colony produces a salt that is known in the market by the name of "Turk's Island salt," (Turk Islands formerly belonging to the Bahamas,) which is regarded as very valuable for packing of meats and fish. For years the salt industry has been at a low ebb, the duty of 6 cents per bushel substantially keeping it out of our market, and so but little has been raked. With a free market in our country it is anticipated that the quantity of salt produced in these islands would be enormously increased, and that most of it would find its way to the United States. — NASSAU, N. P., April 14, 1888.

THOS. J. McLAIN, JR.,
Consul.

EXPORT OF CEREALS FROM ARGENTINE REPUBLIC.

The following table shows the exports of cereals from the Argentine Republic from 1878 to 1887 inclusive:

Year.	Wheat.	Flour.	Maize.	Linseed.
	<i>Kilograms.</i>	<i>Kilograms.</i>	<i>Kilograms.</i>	<i>Kilograms.</i>
1878	109,611	2,919,793	19,064,044	104,279
1879	7,547,438	1,603,045	29,521,317	246,034
1880	25,669,317	1,428,046	15,012,015	957,999
1881	1,165,628	1,287,396	25,052,189	6,394,518
1882	157,078	548,779	107,327,155	23,351,294
1883	1,705,292	4,844,385	18,634,351	23,061,736
1884	60,754,677	3,743,389	113,710,088	33,991,950
1885	108,499,228	7,447,077	197,859,612	69,426,124
1886	37,864,413	5,262,222	231,660,300	37,689,967
1887	237,865,925	5,386,448	361,456,705	81,183,742
Total	481,538,607	34,470,580	1,117,318,776	276,407,923

The value of the exports for the years 1886 and 1887 shows astonishing results, as will be seen by the following:

Article.	1886.		1887.	
	<i>Kilograms.</i>	<i>Dollars.</i>	<i>Kilograms.</i>	<i>Dollars.</i>
Wheat.....	33,864,417	1,510,388	237,865,925	9,514,637
Flax.....	37,689,969	1,825,199	81,183,752	4,059,187
Maize	231,650,300	4,663,421	361,457,705	7,229,154
	760,197	30,747	3,367,300	134,696
				37,633

at the
ceased,
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from 177

Lined

Kilograms

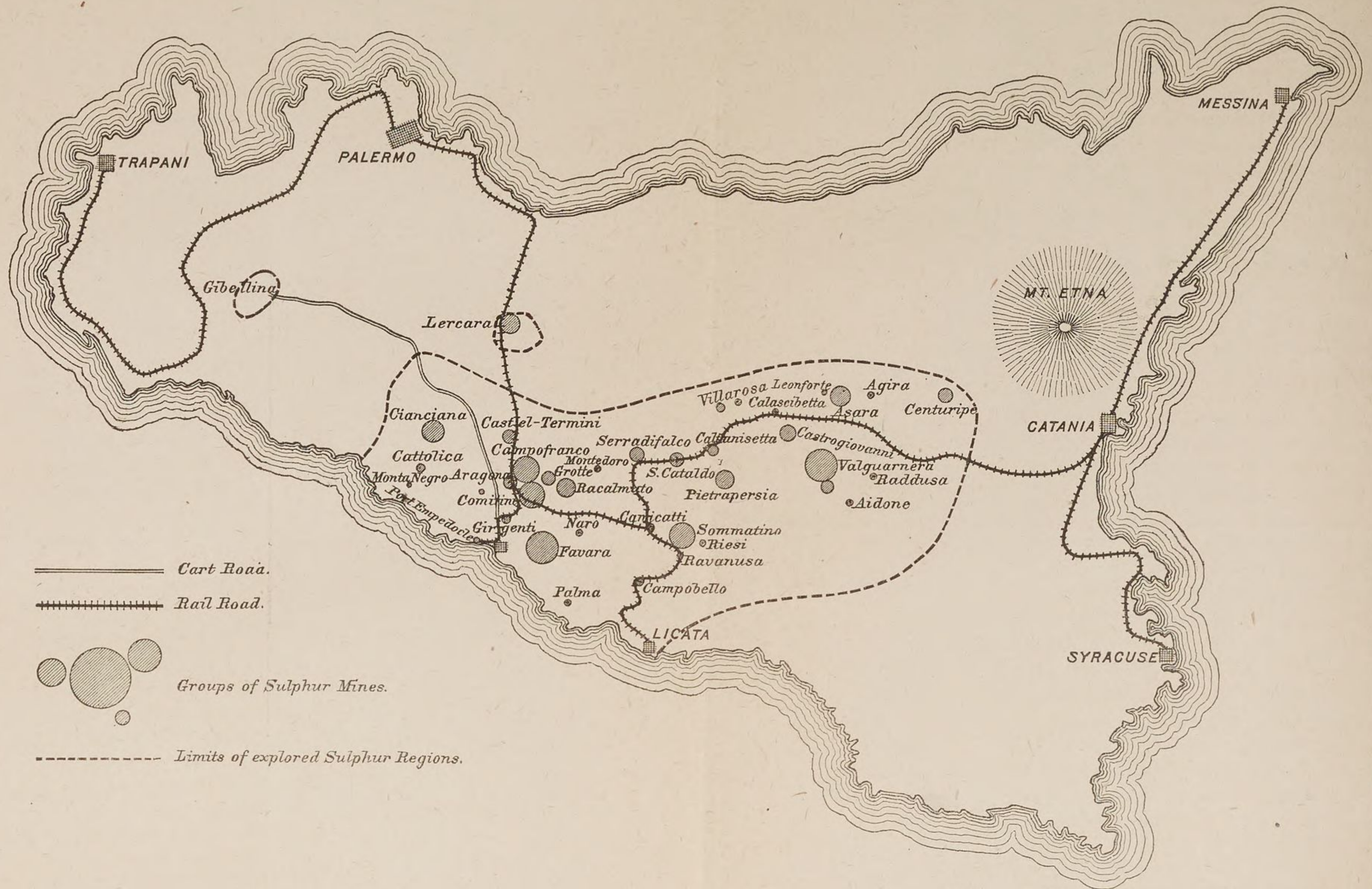
124.77
146.79
157.08
6,24.01
13,33.74
23,01.77
33,09.58
49,44.14
37,84.97
21,13.74
275,47.08

as well as

Dollars

9,84.75
4,95.00
7,75.73
13,44.00
37.75
5.77

MAP OF SICILY, SHOWING THE POSITION OF THE PRINCIPAL SULPHUR MINES.



SULPHUR MINES IN SICILY.

Sulphur, or brimstone, is a hard, brittle substance of various colors, from brilliant yellow to dark brown, without smell when cool, of a mild taste, and burns with a pale blue flame, emitting pungent and suffocating fumes. Its specific gravity is from 1.9 to 2.1.

Sulphur exists more or less in all known countries, but the island of Sicily, it is thought, is the only place where it is produced on a large scale, and consequently that island appears to command the market. Small quantities have been found in the north of Italy, the Grecian Archipelago, Russia, Austria, Poland, France, Spain, eastern shores of Egypt, Tunis, Iceland, Brazil, Central America, and the United States. Large quantities are said to exist in various countries of Asia, but it is understood to be impracticable to utilize the same, consequent upon the distance from any commercial port, and the absence of rail or other roads.

Sulphur is of two kinds, one of which is of volcanic emanation, the other being closely allied to sedimentary rocks. The latter is found in Sicily, on the southern and central portions of the island. Mount Etna, situated in the east, seems to exert no influence in the formation of brimstone. There are various hypotheses relative to its natural formation. Dr. Philip Swarzenburg attributes it to the emanations of sulphur vapor expelled from metallic matter existing in the earth, consequent upon the fire in the latter, while Professors Hoffman and Bischoff ascribe it to the decomposition of sulphureted hydrogen. Hoffman believes the sulphureted hydrogen must have passed through the fissures of stratified rocks, but Bischoff is of opinion that the sulphureted hydrogen must have been the result of the decomposition of sulphate of lime in the presence of organic matter. The theory of others is that sulphur owes its origin to the combination of lacustrine deposits with vegetable matter, and others again suppose that it is due to the action of the sea upon animal remains. The huge banks of rock salt, often met with in the vicinity of sulphur mines, and which in some places stretch for a distance of several miles, seem to indicate that the sea has worked its way into the subsoil. Fish and insects, which are frequently found in strata of tripoli, which lie under sulphur beds, induce the belief that lakes formerly existed in Sicily.

The following is a list of the various strata which form part of the crust of the earth in Sicily, according to Professor Mottura, an Italian geologist:

Pliocene.—Sandstone; coarse calcareous rock; marl.

Upper Miocene.—Calcareous marl: gypsum, etc.; sulphur embedded in calcareous limestone; silicious limestone; tripoli, containing fossils of fish, insects' eggs, etc.

Middle Miocene.—Sandstone containing quartz, intercalated with marl of a saltish taste.

Lower Miocene.—Rock salt; blue marl, containing petroleum and bitumen; flintstone; ferruginous clay, mixed with aragonite and bituminous schists; ferruginous and silicious sandstone.

Eocene — } in \

At times one or another of the strata disappears, while the order of some is slightly reversed on account of the broken state of the crust. Upon the whole, however, the above has been generally observed in the various mines by the author referred to.

Sulphur mines have been operated in Sicily over three hundred years, but until the year 1820 its exportation was confined to narrow limits. At present the number of mines existing in Sicily is about three hundred, nearly two hundred of which, being operated on credit, are, it is understood, destined to an early demise. It is said that there are about 30,000,000 tons of sulphur in Sicily at present, and that the annual production amounts to about 400,000 tons. If this should be true, taking the foregoing as a basis, the supply will become exhausted in about seventy-five years.

In 1819 a law was passed in Italy, which is still in force, governing mining in Sicily, which provides that should a landowner discover ore in his property he would be the owner thereof, and should have the right to mine, operate, or rent the property to others for that purpose, but if he should decline to operate his mines or to rent them to others to be operated, the state would rent them on its own account.

Royalties vary from 12 to 45 per cent. They are paid according to the quality of the ore and the facilities for producing sulphur; 25 per cent. may, however, be taken as an average. There is a land tax of 36 per cent. of the net income, which is usually paid by the owners and lessees of the mines, in proportion to the quantity of sulphur which they produce. The export duty is 10 lire per ton. All mines are inspected by government officials once a year, and the owners are required to furnish the state with plans of the works and their progress, with a view to insure the safety of the workmen and to ascertain the extent of the property.

Those who rent their mines receive from 10 to 40 per cent. of the sulphur produced. Leases are valid for such period as the contracting parties may stipulate therein. The general limit, however, is nine years. The average lease is 25 per cent., 40 per cent. being paid only when the mines are very favorably situated and the production good. Some lessees prefer paying a considerable sum in cash in advance, at the beginning of the term of the lease, and giving 15 or 20 per cent. in sulphur annually thereafter, instead of a higher percentage.

The external indications of the presence of sulphur are the appearance of gypsum and sulphurous springs. These are indubitable signs of the presence of sulphur, and when discovered the process resorted to here, in order to reach the sulphur, is to bore a hole sufficiently large to admit a man, after which steps are constructed in the passage in order to facilitate the workmen in going to and fro. These steps extend across the passage, and are about 10 centimeters high and 35 broad. The inclination of the holes or passages is several meters

passages in order to discover the ore or seam of sulphur. When, however, it has been discovered the passages are made to follow its direction, whether upward or downward. As the direction of seams is in most cases irregular, that of the passages or galleries is likewise. Where the ore is rich and the matrix yielding the miners break it by means of pick-axes and pikes, but when such is not the case gunpowder is resorted to, the ore in this case being carried to the surface by boys. The miners detach the ore from the surrounding material, and the cavities which ensue in consequence assume the appearance of vast caves, which are here and there supported by pillars of rock and ore in order to keep them from falling or giving way. In order to strengthen the galleries sterile rock is piled upon each side and cemented with gypsum. In extensive mines, however, these supports and linings are too weak, and not infrequently, as a result, the galleries and caverns give way, occasionally causing considerable havoc among the miners. Sulphur is found from the surface to a depth of 150 meters. The difficulties met with in operating mines are numerous, and among the greatest in this category are water, landslides, irregularity of seam, deleterious gases, hardness of rocks and matrices. Of these difficulties water is the most frequently met with. Indeed, it is always present, and renders the constant use of pumps necessary. At one time miners were allowed to dig where they pleased so long as sulphur was extracted, the consequence being that in groups of mines, the extent and direction of which being unknown to their respective owners, one mine often fell into or upon another, thus causing destruction to life and property. It was largely for this reason, it is understood, that the government determined to require owners and lessees of mines to furnish plans thereof to proper authority, and directed that official inspection of the mines should be made at stated periods. In order to comply with the decree of the government it became necessary to employ mining engineers to draw the plans, etc., and those employed were generally foreigners. In the system of excavation described no steam power is employed. Pumping is performed by means of primitive wooden hand pumps, and when sufficient ore has been collected it is conveyed on the backs of boys to the surface—a slow, costly, and difficult procedure. This system may, however, be suitable to small mines, but in large mines there is no economy in hand labor; indeed, much is lost in time and expense by it. For this reason steam has been introduced into the larger and more important mines. The machinery employed is a hoisting apparatus, with a drum, around which a coil is wound, with the object of hoisting and lowering trucks in vertical shafts. Steam pumps serve to extract the water. The force of the hoisting apparatus varies from 15 to 50 horse power. The fuel consumed is English and French coal, the former being preferred, as it engenders greater heat. The cost of a ton of coal at the wharf is \$4.40, whereas in the interior of the island it costs about \$10. The shafts or pits are made in the ordinary way, great care being taken in lining them with masonry in order

inclined plane is preferred, the ore being placed in trucks and allowed to run down the plane on rails until it reaches the exterior of the mine, where it suddenly and violently stops, and as a result the trucks are emptied of their load, when they are drawn up the plane to be refilled; and thus the process goes on indefinitely. In these mines a gutter is made in the inclined plane which carries off the water, thus dispensing with the necessity of a pump and the requisites to operate it. The galleries and inclined shafts are lined with beams of pine or larch, which are brought hither from Sardinia, as Sicily possesses very little timber. The mines are illuminated by means of iron oil lamps, the wicks of which are exposed. The lamps are imported from Germany. In certain cases an earthenware lamp, made on the island, and said to be a fac-simile of those used by the Phœnicians, is employed. This lamp is made in the shape of a small bowl. It is filled with oil and a wick inserted, which hangs or extends outward, and is thus ignited, the flame being exposed to the air. Safety lamps are unknown, and those described are generally secure. Few explosions take place—only when confined carbonic hydrogen is met with in considerable quantities, and when the ventilation is not good. In this case the mine is easily ignited, and once on fire may burn for years. The only practical expedient for extinguishing the fire is to close all inlets and outlets in order to shut off the air. This, however, is difficult and takes time. Notwithstanding the closing of communications, the gasses escape through the fissures and openings which obtain everywhere, and the ingress of air makes it next to impossible to extinguish the fire; hence it burns indefinitely or until the mine is exhausted. Occasionally the burning of a mine results beneficially to its owners, in that it dispenses with the necessity of smelting, and produces natural, refined sulphur.

Galleries in extent are usually 1.20 by 1.80 meters, and when ore is not found and it becomes necessary to extend the galleries laborers are paid in accordance with the progress they may make, and the character of the rock, earth, etc., through which it may be necessary to cut, as follows:

Silicious limestone, 60 lire per meter; daily progress, .20 meter.

Gypsum, 50 lire per meter; daily progress, .30 meter.

Marl, 30 lire per meters: daily progress, .50 meter.

Clay, 15 lire per meter; daily progress, 1 meter.

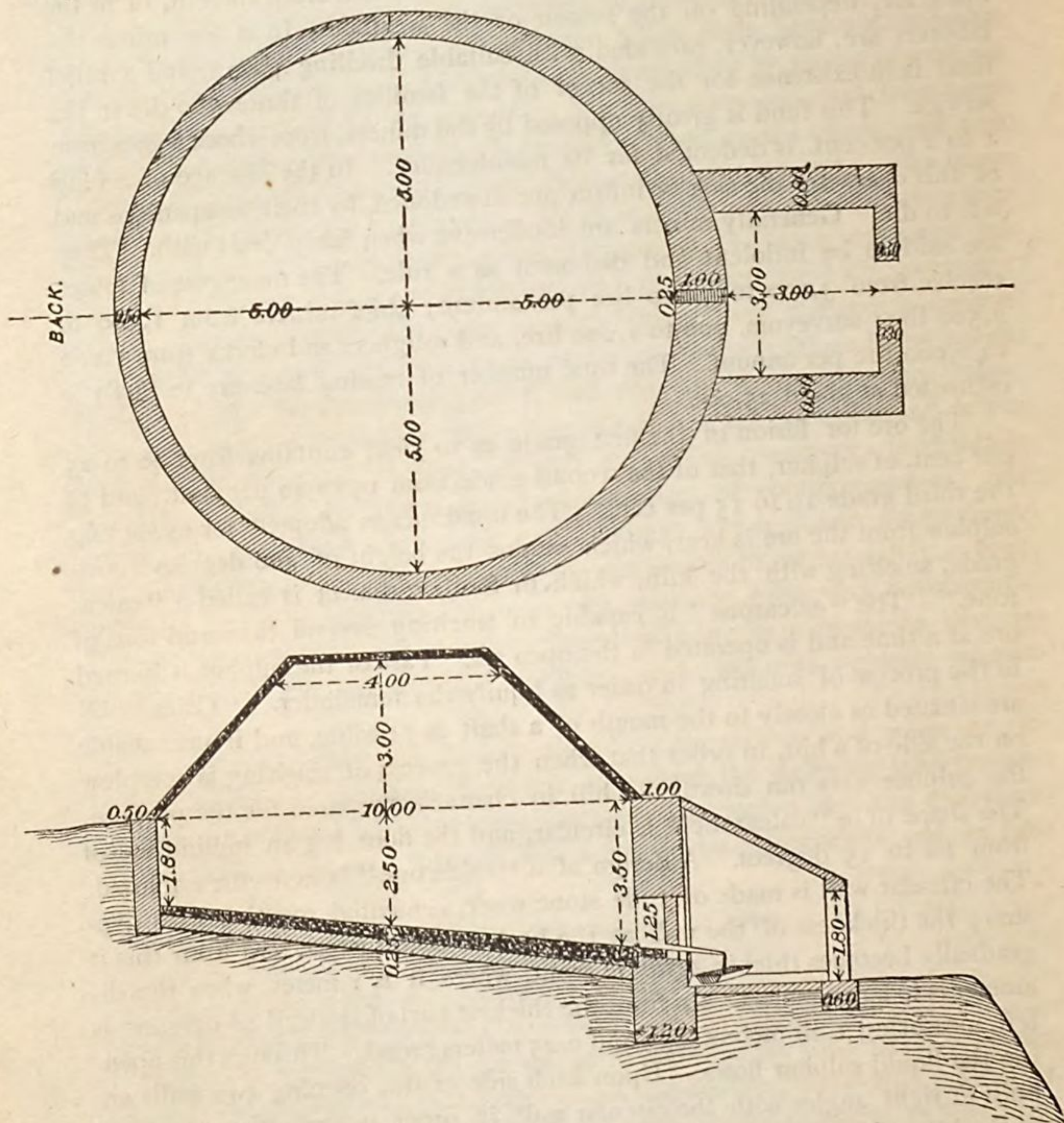
Laborers working in the ore are paid 4.30 lire per ton. This includes digging, extracting, and illumination. In some mines, however, the laborers are paid when the sulphur is fused and ready for exportation. One ton of sulphur, or its equivalent (say from 40 to 50 lire), is the amount generally paid. In mines where this system obtains the administration is only responsible for their maintenance. Each miner produces on an average about $1\frac{1}{2}$ (more than 10 meters in depth

them. They carry from 1,000 to 1,500 pounds of ore daily, or in from six to eight hours. The food consumed by miners is very meager, and consists of bread, oil, wine, or water; occasionally cheese, macaroni, and vegetables are added to the above.

Mining laborers generally can neither read nor write, and when employed in mines distant from habitations or towns, live and sleep therein, or in the open air, depending on the season or the weather. In a few mines the laborers are, however, provided with suitable dwelling places, and a relief fund is in existence for the succor of the families of those who die in the service. This fund is greatly opposed by the miners, from whose wages from 1 to 2 per cent. is deducted for its maintenance. In the absence of a fund of this character the sick or infirm are abandoned by their companions and left to die. Generally miners are inoffensive when fairly dealt with. They are said to be indolent and dishonest as a rule. The managers of mines receive from 3,000 to 5,000 lire per annum; chief miners from 1,500 to 2,500 lire; surveyors, 700 to 1,000 lire, and weighers and clerks from 1,000 to 2,000 lire per annum. The total number of mining laborers in Sicily is estimated at about 25,000.

The ore for fusion of the first grade as to yield contains from 20 to 25 per cent. of sulphur, that of the second grade from 15 to 20 per cent., and of the third grade 10 to 15 per cent. The usual means adopted for extracting sulphur from the ore is heat, which attains the height of 400 degrees centigrade, smelting with the kiln, which in Sicilian dialect is called a "calcarone." The "calcarone" is capable of smelting several thousand tons of ore at a time and is operated in the open air. Part of the sulphur is burned in the process of smelting in order to liquify the remainder. "Calcaroni" are situated as closely to the mouth of a shaft as possible, and if practicable on the side of a hill, in order that when the process of smelting is complete the sulphur may run down the hill in channels prepared for the purpose. The shape of a "calcarone" is circular, and the floor has an inclination of from 10 to 15 degrees. A design of a "calcarone" is herewith enclosed. The circular wall is made of rude stone work, cemented together with gypsum; the thickness of the wall at the back is 0.50 meters, and from this it gradually becomes thicker until in front, where it is 1 meter, when the diameter is to be 10 meters. In front the thickest part of the wall an opening is left, measuring 1.20 meters high and 0.25 meters broad. Through this opening the liquid sulphur flows. Upon each side of this opening two walls are built at right angles with the circular wall, in order to strengthen the front of the kiln. These walls are 80 centimeters thick each and are roofed. A door is hinged to these walls, thus forming a small room in front of each kiln in which the keeper thereof resides from the commencement to the termination of the flow of sulphur. The inclined floor of the kiln is made of stone work and is covered with "ginesi," the name given to the refuse of a former process of smelting. The stone wall.

meters high and the back 1.80 meters. The interior of the wall is plastered with gypsum in order to render it imperemable. The cost of a "calcarone" of about 500 tons capacity is 800 lire. The capacity varies from 40 to 5,000 tons, or more, depending upon circumstances. If a mine is enabled to smelt the whole year round the smaller "calcaroni," being more easily managed, are preferred; the inverse is the case as to the larger "calcaroni," when this



is impracticable. When a "calcarone" is situated within 100 meters of a cereal farm its operation is prohibited by law during the summer, lest the fumes of the sulphur should destroy the crop. When, however, the distance

40 to 500 tons, as there is less risk of a process failing, which occasionally happens, and for the reason that the ore can be smelted as soon as it is extracted, whereas, when kilns or "calcaroni" are situated within or adjacent to the limit adverted to, they can only be operated five or six months in the year, consequent upon which the ore is necessarily stacked up all through the summer or until such time as smelting may be commenced without endangering the crops, when it becomes necessary to use "calcaroni" whose capacity amounts to several thousand tons. As intimated these large "calcaroni" are not so managable as those of smaller dimensions, and as a result many thousands of tons of sulphur are lost in the process of smelting, besides perhaps the loss of an entire year in labor. Again the ore deteriorates or depreciates when long exposed to the air and rain, all of which, when practicable, render the kilns or "calcaroni" of the smaller capacity more advantageous and lucrative to those operating sulphur mines in Sicily. Smelting with a "calcarone" of 200 tons capacity consumes thirty days. One of 800 tons, 60 days, and with a "calcarone" of 2,000 tons capacity from 90 to 120 days are consumed.

In loading or filling the "calcaroni" the larger blocks of ore are placed at the bottom as well as against the mouth, in order to keep the lower part of the kiln as cool as possible with a view of preventing the liquid sulphur from becoming ignited as it passes down to where it makes its exit, etc. The blocks of ore thus first placed in position are for obvious reasons the most sterile. After the foundation is thoroughly laid the building of the "pile" is proceeded with, the larger blocks being placed in the center to form as it were the backbone of the pile, the smaller blocks of ore are arranged on the outside of these and in the interstices. The shape or form of the pile when completed is similar to a truncated cone, and when burning the kiln looks like a small volcano. When the kiln has been filled with ore the whole is covered with ginesi with a view of preventing the escape of the fumes. The ore is then ignited by means of bundles of straw, impregnated or saturated with sulphur, being held above the thin portion of the top of the kiln, which is at once closed with ginesi and the "calcarone" is left to itself for about a week. During the burning process the flames gradually descend and the sulphur contained in the ore is melted by the heat from above. In about seven or eight days sulphuric fumes and sublimed sulphur commences to escape, when it becomes necessary to add a new coat of ginesi to the covering and thus prevent the destruction of vegetation by the sulphur fumes. The mouth of the kiln, which has been left open in order to create a draft, is closed up about this time with gypsum plaster. When the sulphur is all liquified it finds its way to the most depressed part of the kiln and there, upon encountering the large sterile blocks, quite cold, already referred to, solidifies. It is again liquified by means of burning straw, whereupon an iron trough is inserted into a mouth made in the kiln for the purpose, and the reliquified sulphur runs into it, from which it is immediately

moulds call y

the moulds referred to, and is now in solid blocks, each weighing about 100 weight. Two of these blocks constitute a load for a mule, and cost from 4 to 5 francs.

The above is the result when the operation succeeds; but this is not always the case. At times the sulphur becomes solidified before it reaches the mouth of the kiln, because of the heat not being sufficient to keep it liquid in its passage thereto, and other misfortunes not within control, and consequent upon the use of the larger kilns, or "calcaroni."

When the sulphur ceases to run from the kiln the process is complete. The residue is left to cool, which consumes from one to two months. The cooling process could be accomplished in much less time by permitting the air to enter the kiln, but this would be destructive to vegetation, and even to life, consequent upon the fumes of the sulphur. The greatest heat at a given time in a kiln is calculated to be above 650 degrees centigrade—that is, at the close of the process. This enormous heat is generally allowed to waste, whereas it is understood it could be utilized in many ways. A gentleman by the name of Gill is understood to have invented a recuperative kiln, which will, if generally adopted, utilize the heat of former processes named. A ton of ore containing about 25 per cent. of sulphur yields 300 pounds of sulphur. This is considered a good yield. When it yields 200 pounds it is considered medium, and poor when only 75 pounds. Laborers are paid .40 lire per ton for loading and unloading kilns, and from thirty to forty hands are employed at a time. The keeper of a kiln receives from 2 to 2.50 lire per day.

Notwithstanding the "calcarone" has many defects it is the simplest and cheapest mode of smelting, and is preferred here to any other system requiring machinery and skilled labor to operate it.

The following are the principal furnaces in use here: Durand's; Hirzel; Gill and Kayser's System of Fusion; Conby Bollman Process; Thomas Steam Process of Smelting, and Robert Gill's Recuperative Kilns.

There are seven qualities or grades of sulphur, viz:

1. Sulphur almost chemically pure, of a very bright and yellow color.
- Second Best.*—Slightly inferior to the first quality; bright and yellow.
- Second Good.*—Contains 4 to 5 per cent. of earthy matter, but is of a bright yellow.

Second Current.—Dirty yellow, containing more earthy matter than that last named.

Third Best.—Brownish yellow; this tint depends on the amount of bitumen which it contains.

Third Good.—Light brown, containing much extraneous matter.

Third Current.—Brown and coarse.

These qualities are decided by color, not by test. The difference of price

1 1/2 francs per ton. Manufacturers prefer the Third Best, because

distance is short or from mines to railroad stations. The tariff in the latter case is understood to be 1 lire per ton per mile. The railroad tariff is .12 per ton per kilometer; but it is contemplated, it is understood, to reduce this to 7 centimes in a short time. The price per ton of sulphur is as follows:

Grade.	At Porto Empedocle.	At Licata.	At Catania.
	<i>Lire.</i>	<i>Lire.</i>	<i>Lire.</i>
Second best.....	86.60	87.00	90.70
Second good.....	84.42	84.50	90.30
Second current.....	83.90	83.90	88.40
Third best.....	79.00	79.90	86.90
Third good.....	77.80	77.80	83.00
Third current.....	76.80	76.70	.....

Sulphur free on board, brokerage, shipment, export duty, and all other expenses included, costs 20 lire per ton in excess of the above prices. Nearly all the sulphur exported from Palermo emanates from the Lercara mines, in the Province of Palermo, the price per ton being as follows: first quality, 91.60 lire; second quality, 88.40. Sulphur is usually conveyed in steamers to foreign countries from Sicilian ports. The average freight per ton to New York is about as follows: From Palermo, 8.70 lire; from Catania, 13.50 lire; from Girgenti, 16 lire. An additional charge of 2.50 lire is made when the sulphur may be destined for other ports in the United States.

Liebig once said that the degree of civilization of a nation and its wealth could be seen in its consumption of sulphuric acid. Now, although Italy produces immense quantities of sulphur, it cannot, on account of the scarcity of fuel, and other obvious reasons perhaps, compete with certain other countries in the manufacture and consumption of sulphuric acid.

Sulphur is employed in the manufacture of sulphuric acid, and the latter serves in the manufacture of sulphate of soda, chloridic acid, carbonate of soda, azodic acid, ether, stearine candles, purification of oils in connection with precious metals and electric batteries. Nordhausen's sulphuric acid is employed in the manufacture of indigo. Sulphate of soda is employed in the manufacture of artificial soda, glassware, cold mixtures, and medicines. Carbonate of soda is used in the manufacture of soap, bleaching wool, coloring and painting tissues, and in the manufacture of fine crystal ware, and the preparation of borax. Chloric acid is used in the preparation of chlorides with bioxide of manganese, and with chlorides in the preparation of hypochlorides of lime, known in commerce under the name of bleaching powder, and improperly called chloride of lime, which is used as a disinfectant in contagious diseases, in bleaching stuffs, and in the manufacture of paper from vegetable fibers, and in the manufacture of gelatine extracted from bones, as well as in fermenting molasses, and in the manufacture of sugar from beet-root. Sulphur is also used in the preparation of gunpowder and

French company for the trade in sulphur. By the terms of the agreement the producers were required to sell their sulphur to the company at certain fixed prices, and the latter paid the government the sum of \$350,000 annually in consideration of this requirement. This, however, was not a success, and tended to curtail the sulphur industry, and the government, discovering the agreement to be against its interests, annulled it, and established a free system of production, charging an export tax per ton only. At that time sulphuric acid was derived exclusively from sulphur. Hence the demand from all countries was great, and the prices paid for sulphur were high. It was about this period that the sulphur industry was at its zenith. The monopoly having been abolished, every mine did its utmost to produce as much sulphur as possible, and from the export duty exacted by the government there accrued to it a much larger revenue than that which it received during the period of the monopoly. The progress of science has, however, modified the state of things since then, as sulphur can now be obtained from pyrite or pyrite of iron. This discovery immediately caused the price of sulphur to fall, and the great demand therefor correspondingly ceased. In England, at the present time, it is understood that two-thirds of the sulphuric acid used is manufactured from pyrites. The decrease in prices caused many of the mines to suspend operations, and as a result the sulphur remained idle in stock. In 1884 an association was formed at Catania with a view to buying up sulphur thus stored away at the mines and various ports at low prices, and store it away until a favorable opportunity should present itself for the sale thereof. This had the effect of increasing the prices of sulphur in Sicily for some time, and the producers, discovering that the methods of the association increased the foreign demand for their produce as well as its prices, exported it directly themselves, thus breaking up the association referred to, as it was no longer a profitable concern.

The railroad system, which in later years has placed the most important parts of Sicily in communication with the seaboard, has been most beneficial to the sulphur industry. A great saving has been made in transporting it to the ports. This was formerly (as stated) accomplished by carts drawn by mules at an enormous expense, as the roads were wretched, and unless some person of distinction contemplated passing over them repairs were unknown.—
PALERMO, *March 20, 1888.*

PHILIP CARROLL,
Consul.

TRADE OF MADAGASCAR.

Inclosed are returns of trade export and import between the United States and Madagascar for the year ending June 30, 1887, together with the number of arrivals and departures of American vessels at the port of Tamatave for the same period.

In obtaining information for this report on the trade between the United States and other countries with Madagascar I have met with many delays and disappointments in awaiting the completion of reports and returns from the custom house authorities. Hitherto there has been no account ever kept at the custom house, or if there has been no one has ever seen them, as no statistics of trade or amount of revenues collected at the customs were ever published.

It will be remembered that on January 24, 1887, the Hova Government transferred to the "Comptoir d'Escompte de Paris," as security for the payment of the interest on the loan of 10,000,000 francs borrowed from that bank, in order to pay the war indemnity, the following named custom houses: Tamatave, Majunga, Vatomandry, Vohmah, Faeneara, and Mananzary. Therefore I am only able to give the general return of trade with all other countries, except the United States, from January 24, 1887, to June 30, 1887.

In an enclosure is given the entire American import trade with Madagascar for the year ended June 30, 1887. But in order to be able to compare proportionately our trade with other nationalities, I also incorporate in this dispatch the return of American trade for the five months dating from January 24, 1887, to June 30, 1887.

I am very much indebted to the courtesy of Monsier Ollivier, the representative of the "Comptoir d'Escompte de Paris," and the comptroller of customs at this port for the information contained in this report.

American trade with Madagascar holds its own, and in the matter of exports there is no doubt an increase.

The exports to America are principally hides and india-rubber. For the year ended June 30, 1887, the exports to the United States amounted to \$200,722.54, and for the previous year to \$171,723.15, showing an increase for 1887 of \$28,979.39.

An enclosure shows the imports from the United States during the same year to be \$351,865.50, consisting chiefly of unbleached and bleached cotton cloth, kerosene oil, and some flour. The whole year's trade amounted to \$552,588.04. This may be considered a good showing for American commerce for the year ended, for there has hardly ever been a worse year for trade than the present one, resulting from the very unsettled state of the country, brought about from the effects of a three years' war.

Of the whole amount of imports from all nations trading with Madagascar for the half year commencing January 24, 1887, to June 30, 1887,

under the head of cotton fabrics, showing these to be the staple import articles of Madagascar trade.

With regard to the nation that does the most trade with Madagascar, we have only to turn to the most important article of import, viz., unbleached cotton cloth, and we find American imports nearly double those of all other nations put together, having landed \$63,000 worth during the five months from January 24, 1887, to June 30, 1887.

This showing ought to be very satisfactory to our American manufacturers of cotton fabrics, inasmuch as unprincipled competitors of another manufacturing country, in their race to control the trade of Madagascar, have stopped at nothing in their efforts to palm off upon this market an inferior quality of cloth, manufactured from a very unclean and low grade cotton, and got up in a style to imitate as closely as possible the American cloth, they even going so far as to brand their starched-up imitations with American emblems.

The natives of the country are as good judges of the texture of American cloth as any economical American housewife.

Hardware is the next important article of import, showing \$24,637, or about \$50,000 a year. Of this article, during the above named six months, France has furnished \$12,416, England \$6,980, and Germany \$5,980.

For the five months from January 24, 1887, to June 30, 1887, rum imported here from Mauritius, and included in the sum given under the head of English imports, amounted to \$11,421.22. America *does not send* even a pint of rum into the country, and indeed very little comes from any other parts, which is not to be regretted, for the supply is more than abundant so far as it affects the manners and morals of the poor natives.

The rice imported from Mauritius during the same time, and also included under the head and in the amount of English imports, amounted to \$9,437.35. Besides rum and rice, there was also imported from Mauritius during the same period claret or red wine to the amount of \$4,920.38. The red wine sent from Mauritius here is almost entirely the produce of Italian vineyards.

Taking the rum, rice, and red wine imported from Mauritius, we find that these three articles alone amount to \$25,778.95, which goes a long way in swelling the amount of the \$116,946.30 of declared imports as given under the heading of English importations to Madagascar. Deduct the Mauritius trade from the given returns of English imports, and if we include many other articles of merchandise sent here from our neighboring island, Mauritius can claim more than one-half the imports given in the English returns of imports to Madagascar.

France has imported during the same period the sum of \$58,669.87, consisting of silks, hardware, wines and liquors, and different tissues.

Germany comes next, for the same time importing \$27,262.91, consisting

Malagassy war, but belongs to Mauritius merchants, and is virtually Mauritius trade. The same steamer returns freighted with beef cattle for the Mauritius and Reunion markets. Both these islands depend wholly upon Madagascar for their beef supplies.

Thus, for the five months from January 24, 1887, to June 30, 1887, it is seen that the total imports to Tamatave amounted to \$274,608.17, the United States in one article alone importing \$65,815.15.

EXPORTS.

Turning to the exports from January 24, 1887, to June 30, 1887, we find they have exceeded in value the imports by \$12,538.34. Hides stand far above every other produce—in fact, very nearly equal in value all the other produce put together, viz., \$124,389; india-rubber comes next, showing \$81,852. These are the two commodities principally exported to the United States. Rafia fiber comes third at \$81,000. Of this fiber France has imported 504,382 pounds, costing \$25,219.10; England, 187,500 pounds, costing \$9,275; Germany, 40,000 pounds, costing \$2,000. The export of Rafia fiber to Europe is increasing every year, and it is now an important one. Small quantities of this fiber have at times during the last five years been shipped to the United States, but for some reason, unknown here, there appears to be no demand for it in the American market. At present the fiber is selling here at \$4 per 100 pounds; six months ago it brought as high a figure as \$5 per 100 pounds. In October last the fiber sold in France at \$6.50 per 100 pounds. Why this produce could not find a ready and profitable market in the United States I am at a loss to conjecture.

Perhaps our merchants and manufacturers have not as yet given any consideration to the uses to which the fiber is appropriated in Europe. It is used exclusively in France by the vintagers of the country for tying vines.

Since the disease among the vines made its appearance and spread itself so generally throughout the vineyards of France, causing so much damage to the plants, the French vintagers, in order to arrest the further spread of the disease and to prevent the entire destruction of the vines, have found it expedient to cut off the diseased part of the plant, and to engraft into the healthy portion of the stem fresh cuttings. The new cuttings are principally imported from America, and to a very great extent from California.

The Rafia fiber is manufactured in France into a cord or twine, and being of a vegetable substance it is found to be better adapted for binding the vines than have other materials generally used in the manufacture of cordages, as it resists exposure to the weather better than other substances, and is less liable to suffer from rot.

The export of oxen to Mauritius and Réunion for the same period amounted to \$13,000; hogs and straw hats (the latter, manufactured by the natives, somewhat resembling in texture the Panama hat worn in the United States) dispute the next place. There is no other article of export worthy of mention.

Of the exports the hides go chiefly to America, the Rafia fiber almost entirely to France, while bullocks are sent exclusively to Réunion and Mauritius.

NAVIGATION.

Turning to the shipping we see that during the year from June 30, 1886, to June 30, 1887, there were eight American merchant vessels entered and cleared from the port of Tamatave, bearing a tonnage of $4,739\frac{84}{100}$ tons, and one man-of-war, the *Alliance*. I am only able to give the returns of our own merchant marine for the whole year, from June 30, 1886, to June 30, 1887. The returns of navigation for other nationalities will be from January 24, 1887, to June 30, 1887.

During the above period 91 vessels entered the port of Tamatave, of which 14 were French, 65 sailing under the English flag, and the remainder of other nationalities. The tonnage of the French vessels, however, shows more than double that of the English, the 14 French vessels giving a tonnage of 19,209, while the 65 carrying the English flag show only 7,322 tons, or a few tons more than that registered of the 8 American vessels. Nearly all the English vessels entering this port are small trading vessels plying between the port of Tamatave and Mauritius, and are owned by masters or merchants of that island.

This is the first year in the history of Tamatave and Majunga as sea ports known to the civilized world that any one has been able to tell what these ports were worth to the Hova Government. The duties collected at Tamatave alone from December 5, 1886, to December 5, 1887, amounted in round numbers to 420,000 francs, or in American coin to \$84,000. This may be considered a very low estimate when we take into account the dullness of trade following the conclusion of a three years' war. The next port of importance is Majunga, on the west coast. The duties collected at that point during the same period amounted to 47,000 francs, or \$9,400. All the other ports of the island are of less value to the Government in the amount of revenue collected.

Statement showing the imports at Tamatave from January 24 to June 30, 1887.

Description.	Value.	Countries whence imported.
Cotton cloth, kerosene oil, and flour.....	\$65,815 15	United States.
Hardware, silks, different tissues, wine and liquors.....	58,669 87	France.
General merchandise, including the trade of Mauritius.....	116,946 35	England, including Mauritius
Hardware, beer, and American cotton cloths.....	27,262 91	Germany.
Merchandise	5,860 97	Denmark.*
Merchandise	52 92	Austria.
Total	\$274,608 17	

Statement showing the imports at Tamatave for the year ending June 30, 1887.

Description.	Quantity.	Value.	Countries whence imported.
6,717 bales unbleached cotton cloth.....yards...	6,044,000	\$332,500 00	United States.
66 cases bleached cotton cloth..... " ...	97,290	7,770 00	" "
33 cases prints " ...	68,000	5,157 00	" "
3,343 cases kerosene oil .....gallons.	37,450	2,996 00	" "
500 barrels flour.....		2,500 00	" "
1,400 shooks.....		840 00	" "
55 boxes soap.....pounds..		27 50	" "
150 deals.....	670	74 00	" "
Total.....		\$351,865 50	

Statement showing the exports from Tamatave from January 24 to June 30, 1887.

Description.	Value, including charges.	Countries whither exported.
Dry salted hides, and india-rubber.....	\$117,248 12	United States.
Wax, rafia, rabanes, and hides.....	84,099 70	France.
Wax, rafia, and hides	37,225 78	England.
Hides, rafia, and rabanes	28,474 65	Germany.
Cattle and other merchandise for Mauritius *.....	20,098 26	Denmark.
Total	\$287,146 51	

* Sent in a steamer carrying the Danish flag and returned under the head of Danish exports.

Résumé of the different exports from Tamatave from January 24 to June 30, 1887.

Description.	Quantity.	Countries whither exported.
Wax .....pounds..	121,677	France and England.
India-rubber. " ...	164,265	America, France and England.
Goum copal..... " ...	16,333	France and Germany.
Rafia " ...	731,882	France, Germany and England.
Rabanes.....prices....	23,137	France and England.
Dry salted hides.....	59,847	America, France and Germany.
Sheep-skins	36,467	America, France and England.
Beef cattle.....head....	1,169	Meritius and Bourbon.
Straw hats manufactured by the natives	3,794	France and England.

The above are the principal commodities exported from Madagascar.

Statement showing the navigation at the port of Tamatave from January 24 to June 30, 1887, except for American vessels, which is for the year ending June 30, 1887.

Nationality of vessels.	Entered.		Cleared.	
	No.	Tons.	No.	Tons.
American.....	8	4,739 ⁸⁴ ₁₀₀	8	4,739 ⁸⁴ ₁₀₀
French.....	14	19,209	15	15,494
English.....	65	7,322	72	7,271
German.....	4	1,492	4	1,471
Danish.....	3	1,836	1	1,836
Austrian.....	1	84	1	84
Total.....				

The arrivals and departures of American vessels are given for the year ending June 30, 1887. The arrivals and departures of vessels of other nationalities are only given from January 24, 1887, (the date on which the custom house passed into the hands of the French), to June 30, 1887, and as they are not classified under the head of steam or sailing vessels, the number and tonnage are given in the aggregate.

By the above statement you will perceive that during the five months from January 24, 1887, to June 30, 1887, there were entries at this port of 6 vessels carrying the English flag with only a tonnage of 7,322 tons, this includes the steamer carrying the mail from the Cape of Good Hope here. There were during the same time 72 departures of vessels carrying the English flag with a tonnage of 7,271 tons. The greater number of English arrivals and departures are small vessels trading between this port and Maritime, and given under the head of English navigation. You will also see that during the same period there were 14 arrivals and 15 departures of French vessels with the aggregate tonnage of arrivals and departures of 34,703 tons. This amount includes the large mail steamer arriving here monthly.

TAMATAVE, *December 12, 1887.*

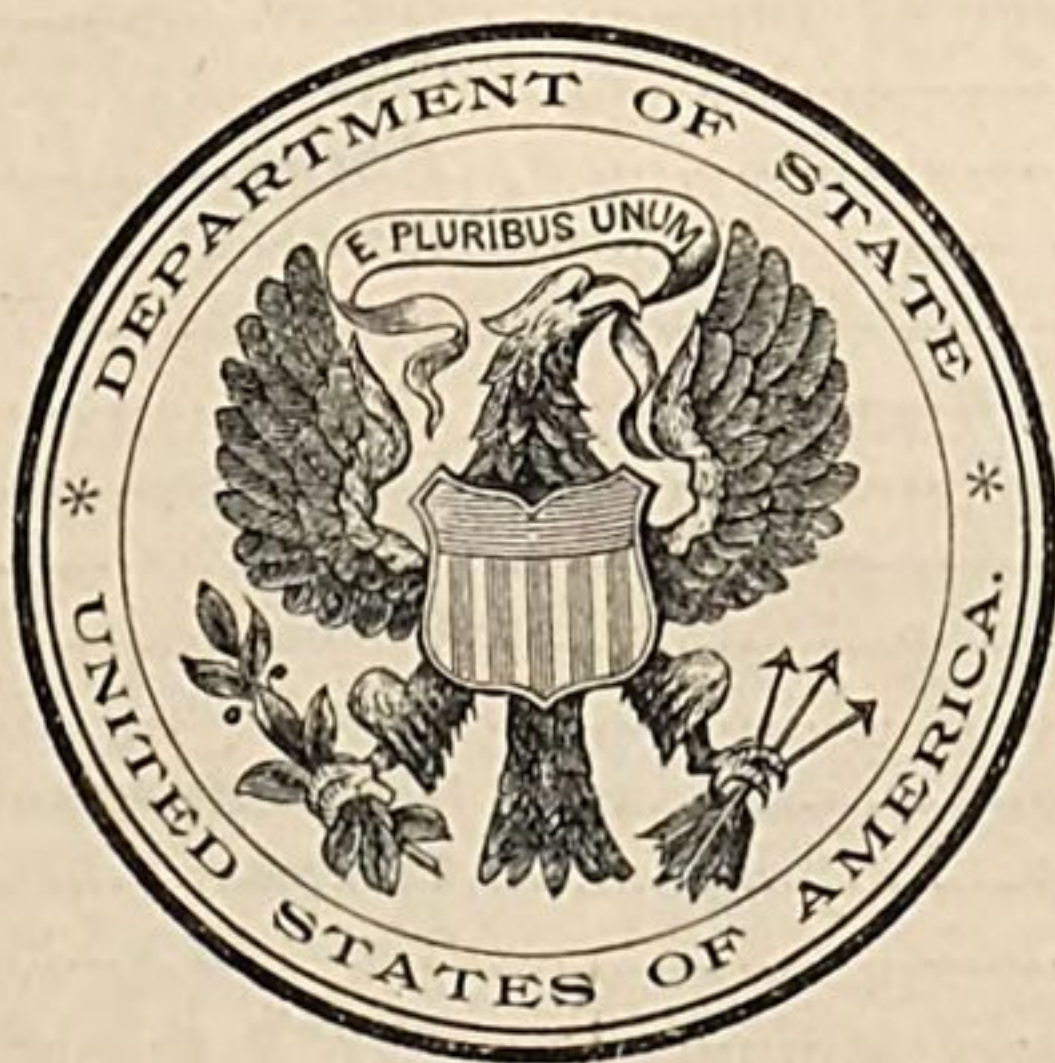
JOHN P. CAMPBELL,
Consul.

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CONSULAR REPORTS

ON

COMMERCE, MANUFACTURES, ETC

No. 93.—MAY, 1888.

AMERICAN PORK IN SWEDEN.

In a bill now before the Swedish Diet, at Stockholm, called the industrial tariff bill, the object of which is to revise the tariff on a protection basis in regard to Swedish trade and labor, an important item in the provision schedule, imposing a duty on American pork, has passed both chambers of the Diet. The duty has been fixed at 25 öre (6.7 cents) on smoked pork, and 20 öre (5.36 cents) on all other pork per kilogram (2.2046 pounds avoirdupois), which is so heavy that its undoubted effect will be to prohibit the importation, which at this port alone has averaged about three thousand tons per annum.

ERNEST A. MAN,
Consul.

Extract from the debate on the item of the Industrial Tariff Bill regarding American pork in the first chamber of the Swedish Diet, at Stockholm, April 19, 1888.

MR. DICKSON.—If the Diet, through the introduction of a duty upon breadstuffs a short time since, increased the cost of living for the poor, it would seem to be still further adding to the burden by its present proposition. The bill appears as a protection to all Swedish trade and labor; but if there is anything in Sweden which needs protection it is the physical strength of the Swedish workingman! And what compensation does this bill offer the laborer for the food it now proposes to make more expensive for him? For my part, I find such a proposition as this present one exceedingly unjust and disquieting, and distinctly offer it my opposition. Besides, there can not be found the least reason to lay a duty on American pork, as there is certainly no Swedish industry which, in the past decade, has advanced so rapidly as swine raising.

MR. FORSSMAN did not think it advisable to make a different duty for smoked and other pork; also found the proposed duties too high. He was opposed to the measure because it would not only affect the working people, but the indigent classes as well. He would not have given the least sympathy to the question had he not heard from reliable quarters that Sweden could produce sufficient pork for its own consumption. As this was highly desirable he had joined the protectionists, but did not approve of so high a duty as proposed. As many inconveniences

BARON BARNEKOW said that one of the main reasons for Germany, Denmark, and other countries excluding American pork from their lists of permitted imports was the great prevalence of swinepest in America, which made the article dangerous to health. He also thought that Sweden could easily produce all the pork needed at home, and more; and disputed the fact that a duty here would increase the price, as some have stated it had done in Germany.

Mr. HEDLUND.—If there is a measure calculated to call up bad feeling it is certainly this. The duty in question would exclusively affect the poorest classes. The other articles in this tariff more or less concern all classes of society; but a duty on American pork necessarily falls upon that portion of the people possessed of the least means.

Baron Klinckomstrom invited Mr. Hedlund to a further discussion of the subject and endeavored to show by statistics that the free-trade assertion, that protective duties increased the price of wares, had not been verified by subsequent events in Germany.

Mr. ALMÉN said a few words because he had heard sanitary questions brought into the discussion. Abroad they certainly had laid an embargo on American pork, but that was by no means owing to sanitary reasons. There was much humbug in these sanitary arguments, as they were an excellent resource when everything else failed. There was never any certainty that the swinepest could harm human beings, and to let empty guesses influence the direction of taxation could not be right. To procure cheap food for the poor was much more important than most so-called sanitary measures. As to American pork it could not be denied by any one that it was a positive necessity to the working man, as the Swedish pork could not replace it on account of its especial characteristics, such as superior fatness, etc. One should be careful not to drive the matter so far that the Swedish workman would be obliged to seek his cheap American pork on the other side of the Atlantic.

Mr. CARLBERG approved the measure on the ground, among others, that American pork brought a higher price in the market than Swedish, and if the working people in spite of that insisted upon eating it their condition could certainly not be so bad as several speakers had represented.

Mr. EKMAN declared the protectionists' assertions that tariff duties helped industries without increasing the price of wages to be some sort of sorcery. If only the duties are imposed, they say, no one would have reason to complain. It is impossible that the introduction of taxation on the necessities of life can produce such a wonderful result. I know of at least one case where the opposite has been the result. As every one knows, agriculture is at present in a very unprofitable condition, not only in our own, but in many other countries. In one branch, in which I am interested, it has, as a consequence, been necessary to pay very low wages to the workmen, as the producers themselves received low value for their goods. The workmen were contented with small wages, because they knew that their employers could not give them more. But the speeches of the protectionists reached even them, with their specious promises that should the tariff bill go through wages would rise, and when, therefore, the price of flour increased about 30 öre a pound, they came up and demanded that their wages should be increased. As our condition, however, had not improved, we were obliged to deny their request, and one can hardly blame them for leaving us for America. To judge from this example, a similar emigration, a thousand fold increased, may confidently be looked for if the Diet continues to add to the cost of living. I agree, therefore, heartily with those who think that the proposed tariff will create great dissatisfaction. It has further been said that American pork is dearer than the Swedish article, but as it contains more nutritive qualities, it is on the whole cheaper. The proper way to find a market for our pork is not to seek it among our working population, but among those of better means and abroad.

Mr. BEXELL thought that a too low tariff was the cause of the great emigration, and expressed a view that the Swedish teachers, especially in the public schools, were implanting

TARIFF CHANGES IN THE BAHAMAS.

I have to inform you that by an act of assembly passed during the recent session of the colonial legislature the following articles have been placed on the free list, and can hereafter be imported into the colony without the payment of any duties, viz: "Steam-launches, barrels, half barrels, and other packages to be used for packing any article whatever; also staves, heads, and hoops used in the construction of barrels, half barrels, and other packages for the packing of any article whatever; also crate ends and laths." The article of hemp, which has been heretofore free of duty, will be subject on importation to a duty of 20 per cent. ad valorem after this date. — NASSAU, N. P., *April 28, 1888.*

THOMAS J. McLAIN, JR.

Consul.

COMMERCIAL AFFAIRS IN HAWAII.

The year 1887 was an eventful one in the life of the Hawaiian Islands. The recuperation from the great fire disaster of 1886, the uncertainty regarding the extension of the reciprocity treaty with the United States, and the ebullition of popular discontent with the management of public affairs, culminating in June last in a semi-revolution—all contributed to produce feelings of distrust and uncertainty in the future of the islands, that militated greatly against the rapid progress which marked their course during the few years previous. These discouraging elements were felt to a greater extent in the local stocks, and trade, in rents, and in transactions in real estate. There was reduction everywhere, and investors were few. The population represented by the white race, including Portuguese, was considerably reduced, although the statistics show that there were 903 more immigrants than emigrants during the year. The arrival of European and American whites numbered 1,801, and the departures 2,454, showing a loss of white population to the islands, including Portuguese, of 653. The largest percentage of increase was Japanese, being 1,353 arrivals against 95 departures. The Chinese exodus was about equal to the immigration. It will thus be seen that the Japanese influx alone is responsible for the excess of immigration over emigration. They were brought in upon contracts for labor on the sugar plantations, and at present seem to be the favorite workers with the planters. The Portuguese decline to renew their contracts, and are leaving for the United States as rapidly as they can raise the funds to pay their passage, 653 having left the islands during the year. This exodus has been a disappointment to the Government and planters, as it was believed that they would renew their contracts, and become the permanent labor element in the country. The plantation work does not suit them, they refuse to re-contract, and the opportunities for making an independent livelihood do not exist.

The total value of exports and imports of merchandise during the year amounted to \$14,473,288, as against \$15,335,024 for 1886, showing a decrease of \$861,736. The year

imports of merchandise were \$4,943,840, as against \$4,877,738 during the preceding year, showing an increase of \$66,102. The excess of value of exports over imports for the year was \$4,585,606, being a falling off \$877,030 as compared with the preceding year.

During the year the specie imports were \$900,353, as against \$1,138,571 for the previous year. Bank exchange amounted to \$9,438,906.12.

The amount of sugar exported was 212,763,647 pounds. In 1886 it was 216,223,615 pounds. The slight decrease was not on account of reduction of acreage, but of dry weather at several of the plantations.

Of the total value of exports and imports \$13,138,916, or 90.79 per cent., were to and from the United States; Great Britain, \$661,540, or 4.58 per cent.; Germany, \$184,561, or 1.27 per cent.; Australia and New Zealand, \$163,001, or 1.12 per cent.; from all other countries, \$56,544.

The number of Hawaiian vessels engaged in commerce was 57, with a tonnage of 12,244—one vessel less than in 1886. The total tonnage of foreign vessels entered at Hawaiian ports during the year was 198,459, apportioned as follows: American, 118,847; British, 20,040; German, 4,930; and 7,599 of other nations.

The duties on imports during the year were \$595,002, against \$580,444 the preceding year, an increase of \$14,558. The duties on spirits amounted to \$247,023, or 42 per cent., and upon merchandise \$174,012, or 29 per cent.; from all other sources, \$173,966, or 29 per cent. As compared with 1886 it shows an increase of \$20,901 on merchandise, and a decrease of \$34,726 on spirits. The value of opium imported was \$129,133.59.

The sugar trust, and the promise of the immense experiment in the production of beet sugar, have had a somewhat depressing effect upon sugar stocks, although it is believed that our planters' association has joined the pool. This, however, does not include Spreckels & Co., who control one-third of the sugar on the islands.

The following table shows the domestic exports for the year 1887:

Articles.	Quantity.	Value.
Sugar.....pounds	212,763,647	8,694,964 07
Rice....."	13,684,200	554,294 55
Wool....."	75,911	7,010 00
Tallow....."	56,713	1,121 20
Awa....."	9,636	1,031 82
Coffee....."	5,300	972 00
Taro flour....."	1,840	133 60
Paddy.....bunches ...	400	10 00
Bananas.....gallons	58,938	54,703 25
Molasses.....pieces	71,222	10,522 76
Hides....."	28,639	96,850 61
Goat skins....."	16,233	7,357 72
	6,871	849 63
	82	55 09
		1,460 00

The following table shows the imports into the Hawaiian Islands during the year 1887:

Articles.	Value of goods paying duty.	Value of goods free by treaty.	Value of goods in bond.	Value of goods free by code.	Total.
Ale, porter, beer, cider.....	55,951 13		20,032 95		75,984 08
Animals and birds.....	540 47	70,979 31		2,504 71	74,024 49
Building materials.....	55,757 41	60,457 65			116,215 06
Clothing, hats, boots and shoes..	202,007 66	139,143 83	1,805 85		342,957 34
Coal and coke.....				56,887 50	56,887 50
Crockery, glassware, lamps, etc.	45,769 59		770 82		49,540 41
Diplomats' sundries.....				21,099 10	21,099 10
Drugs, surgical instruments, etc.	42,408 25		252 80		42,661 05
Dry goods—Cottons.....	61,437 28	168,075 57	218 14		229,730 99
Linens.....	23,524 42		295 98		23,820 40
Silks.....	39,744 23		1,287 00		41,031 23
Woolens.....	91,610 12	14,608 13	1,380 83		107,599 08
Mixtures.....	24,163 34	3,897 05			28,060 39
Fancy goods, millinery, etc.....	108,984 95	10,359 09	1,386 82		120,712 86
Fertilizer and bone meal.....				41,806 66	41,806 66
Fish.....	8,424 64	88,335 19			96,759 83
Flour.....	1,200 82	175,662 44			176,863 26
Fruits.....	55 24	12,664 46			12,719 70
Furniture.....	47,496 11	36,424 21	461 85		84,382 17
Grain and feed.....	1,287 33	287,779 65			289,066 98
Groceries and provisions.....	110,441 79	358,357 89	701 47		469,501 15
Guns and gun materials.....	12,050 59	10,668 90			22,719 49
Gunpowder.....	4,778 31				4,778 31
His Majesty (sundries).....				12,218 19	12,218 19
Hawaiian Governm't (sundries).				48,570 60	48,570 60
Hardware, implements, tools ...	76,911 64	157,920 74	3,110 45		237,942 83
Iron, steel, etc.....	17,682 15	22,731 00	1,781 37	8,388 90	50,583 42
Jewelry, plate, clocks.....	54,633 55		2,167 50		56,801 05
Leather.....	1,301 37	45,574 86	20 94		46,897 17
Lumber.....	2,926 99	199,442 18			202,369 17
Machinery.....	65,230 79	132,720 48			197,951 27
Matches.....	712 18	12,510 31			13,222 49
Musical instruments.....	8,641 86	4,008 25	778 34		13,428 45
Naval stores.....	14,952 67	39,921 06	1,275 75		56,149 48
Oils (cocoanut, kerosene, etc.)...	7,622 86	76,774 88	1,050 00		85,447 74
Opium.....	59,331 79		69,801 80		129,133 59
Paints, oils, and turpentine.....	42,713 47	2,028 55			44,742 02
Perfumery and toilet articles.....	14,981 90	2,369 79	101 33		17,453 02
Plants and seeds.....				180 25	180 25
Railroad materials, rails, etc.....	5,637 86	1,765 40			7,403 26
Returned cargoes.....				2,655 93	2,655 93
Saddlery, carriages, etc.....	29,580 37	41,315 57	702 80		71,598 74
Sheathing material (metal).....				604 22	604 22
Shooks, bags, and containers ...	99,971 25	13,203 36	6,263 14	1,704 65	121,142 40
Spirits.....	4,974 77		89,462 21		94,436 98
Stationery and books.....	17,383 35	55,930 67	606 90	407 00	74,327 92
Tea.....	19,508 17				19,508 17
Tin, tinware, and materials.....	7,543 89				7,543 89
Tobacco, cigars, etc.....	17,254 22	94,221 19	23,445 27		134,920 68
Wines (light).....	57,940 19		20,729 35		78,669 54
Sundries by statute.....				1,814 66	1,814 66
Sundries by permission.....				11,513 13	11,513 13
Sundries (personal).....				17,682 49	17,682 49
Sundries (merchandise).....	62,072 63	46,579 20	1,344 92		109,996 75
Charges on invoices.....	63,011 54	30,740 50	6,028 29		99,780 33
25 per cent. uncertified invoices.	3,922 32				

In addition to the domestic exports there were supplies furnished to outward bound merchant vessels to the amount of \$75,300, and to national vessels \$102,300.

The number of whaling vessels which arrived was: United States, 22; British, 1.

Parties are endeavoring to borrow between \$2,000,000 and \$3,000,000 in London to build a railroad on the Island of Hawaii, terminating at the port of Hilo. If it succeeds it will very seriously impair the business and prosperity of Honolulu, as sugar will then be shipped direct from its terminus to the coast, which will make Hilo an important business port, and a rival to Honolulu. Another railroad is projected in connection with a land scheme in the vicinity of Pearl River, which has its basis largely on the belief that the United States will eventually improve the harbor the river will afford. There is also a street railroad scheme, which promises speedy fruition. Thus far the loans have not been raised, and it is questionable whether they will be until there is a more settled political condition in the kingdom. — HONOLULU, *March 28, 1888.*

JOHN H. PUTNAM,
Consul General.

The following table shows the domestic exports from the Hawaiian Islands during the first quarter of 1888, as compared with the first quarter of 1887:

Articles.	1888.	1887.	Increase.	Decrease.
Sugar.....pounds ..	80,473,063	66,306,845	14,166,218	.....
Rice....." ..	3,796,900	2,353,200	1,443,700	.....
Wool....." ..	320,396	.....	320,396	.....
Hides.....pieces ..	5,228	7,572	.....	2,344
Bananas.....bunches ..	15,931	12,931	3,000	.....
Tallow.....pounds ..	24,968	.....	24,968	.....
Goat skins.....pieces ..	2,392	3,247	.....	855
Betel leaves.....boxes, ..	112	94	18	.....
Molasses.....gallons ..	3,500	21,415	.....	17,915
Sheep skins.....pieces ..	1,829	1,800	29	.....
Coffee.....pounds ..	200	1,500	.....	1,300
Awa....." ..	.....	1,936	.....	1,936

GAS STOVES IN GERMANY.

While the electric light is gradually taking the place of illuminating gas, the latter is evidently going to meet with an extensive use in another direction on account of its considerable evolution of heat. In comparison with the electric light it is this property which is—apart from minor brightness—considered as its principal deficiency. It is stated that the heat of a kilogram of gas amounts to 13,000 calories, while from a kilogram of pit coal on an

by experts, is still doubted by a part of the public, while to another part it is either insufficiently or wholly unknown. Particularly the offensive smell and great expenditure form the principal objections, and they are, considering the quality of most of the gas-stoves hitherto used, not unfounded. Lately some technologists and manufacturers have succeeded in inventing and introducing new systems, and it is attributed to their efforts that the people at large take a greater interest in the subject. The administrations of gas-light companies are also striving to bring to the knowledge of the public the economical value of gas heating, thus complying with the fundamental principles for an extensive introduction. Moreover, in some of the largest cities like Berlin, Leipsic, etc., the price of gas for heating purposes has been reduced, and temporary as well as permanent exhibitions of gas-stoves have been brought about to facilitate a complete knowledge of their uses and advantages. In Leipsic even cooking apparatus are let for a comparatively small compensation, to give also private persons an opportunity to get acquainted with them. Of still greater importance are the efforts apparently accompanied with decided success of the International Association for Culinary Art, having its seat in Leipsic. At a culinary exhibition held by this society during the past year attention was called to a number of gas-stoves of various systems. A public examination on the 25th of October last, in the same city, convincingly proved the practicability of this mode of heating. The trials were made on gas-hearths of different construction by members of the culinary association in presence of visitors and with dishes of the simplest and of the most artful kind. For comparative purposes ordinary hearths were used at the same time. The apparatus applied were of German, Swiss, English, and French origin, and all had been supplied by the Leipsic Gas-Light Company, and provided with a gasometer to state the exact consumption of gas. Neither an offensive smell nor great heat was perceivable on the occasion, while the cleanliness and conveniency were remarkable. The gas cooking proved easy to regulate, and required no further work after the dishes were done. The chambers for wood and coal become superfluous. There are no ashes or soot, and repairs are only necessary in exceptional cases and to a limited extent. The apparatus are easily transported and can be applied in any locality. They are to be preferred, owing to the quickness with which food is prepared, accounting partly for their cheapness. A family meal required only ten minutes time and 15 pfennige ($3\frac{1}{2}$ c.) worth of gas; the baking of oysters not quite a minute, consuming 10 liters of gas; four kilograms of roast mutton, ten minutes, with 0.25, and five kilograms of roast beef, ten minutes, with 0.3 cubic meter of gas. Taste and appearance of the food were excellent.

I recommend these facts to the serious consideration of our manufacturers of gas-stoves, as here is doubtless a market giving promise of an extensive business. If proper steps are taken our manufactures will find a ready sale, as I know by experience that they are far superior to any others. — GERA.

April 13, 1888

NATURAL GAS IN CHINA.

The following abstract of an account given by Baron von Richtofen of natural gas wells in China may be interesting. These wells are found in Sz'chwan, near a town called Tsz-lin-tsing. In an area of twenty-seven li (9 miles) diameter salt wells are found. To make a well the Chinese use a long and elastic bamboo pole, supported in the middle by a cross piece, a rope made by coupling the ends of long (not twisted) slices of bamboo, and an iron instrument which weighs 120 catties (catty = $1\frac{1}{3}$ pounds). The rope is fastened on the thin end of the pole, and the iron on the end of the rope. A slight up and down motion of the thick end of the pole makes the iron hop and bore a vertical hole with its broad, sharpened edge. The ground to be perforated consists chiefly of sandstone and clay. When a portion of the rock is mashed clear water is poured into the hole, a long bamboo tube with a valve in the bottom is lowered and the turbid water raised to the top. Pipes of cypress wood are rammed in to protect the sides of the bored hole and to prevent the water contained in the surrounding ground from getting access to the well; the pipes are attached to each other at the ends with nails, hemp, and tung oil. The inner width of the pipes is about 5 inches. As the work proceeds the pipes are rammed deeper, and a new one attached on the top; the rope, too, is made longer. At a depth varying from 70 to 100 chang (700 to 1,000 feet) the brine is struck, and the well is fit for use. The brine is raised to the top through long bamboo tubes and bamboo ropes, as described, by means of a horsewhim, and then carried to large pans for evaporation, or led to them through bamboo pipes.

Besides these wells there are others, which are bored to the depth of from 1,800 to 2,000 feet. At that distance below the surface petroleum is struck. Immediately on reaching it an inflammatory gas escapes with great violence. Work is now stopped, and a wooden cap fastened over the mouth of the pit, perforated by several rows of round holes. In each of them a bamboo pipe is inserted, and through these the gas is led under the evaporation pans. The pipes ramify, and on each end a tapering mouthpiece, terminating in a small aperture, is attached. The gas is then used for evaporating the brine.

The enterprising spirit which induced the Chinese to examine the ground at so great a depth is said to have had its origin in the drying up of a brine pit. The proprietor was in hopes of meeting brine at a greater depth, but found instead the gas.

When the country was infested with rebels during the Taiping rebellion they removed the cap from one of the gas pits and set fire to it. Since that time, or at least up to the time that Baron Richtofen wrote, a long column of fire rose from that pit, and it is considered nearly impossible to stop the flame.

salt works of Tsz-lin-tsing yield considerable revenue to the government, and have besides enriched numerous proprietors, and give occupation to a numerous population. The number of "fire pits" is twenty-four, and the salt pits are innumerable. Some of them do not enjoy the advantages of gas. The brine is evaporated with grass and wood.

There are salt pits in neighboring localities on the Min River, but no gas pits. —PEKING, *March 10, 1888.*

CHARLES DENBY.

SLAVERY IN CHINA.

As some discussion has lately taken place in the United States touching slavery in China I submit the following observations thereon:

The origin of slavery in China is given in an ancient writing, the Fong-fou-ting, in substance as follows: In antiquity there were no slaves, neither male nor female. The first slaves were felons who lost their liberty by reason of their crimes. But they were slaves simply in the sense that their labor belonged to the public. Prisoners and captives taken in war introduced a second species of slavery. Finally, in the troubles and misfortunes of the third dynasty, the poor, who were without resources, gave themselves with their families to the great and rich who were willing to support them. These two last forms of slavery caused the condition to be regarded rather as a misfortune than a shame.

In the memoirs prepared by the early Catholic missionaries, and printed in 1777, there are treatises on slavery. Marriage of slaves was encouraged for the sake of the increase.

Slaves were usually treated with kindness, and were supported by their masters in their old age. Manumission was common, and instances are recorded wherein slaves refused the tender of their freedom. The missionaries wax eloquent in defense of slavery, and regard the institution as developing "a mode of thought and sentiment worthy of the authors of *Telemachus* and of the *Friend of Man*." The traditional Chinese patriarch's idea of the family, they say, modifies and tempers slavery so that masters and slaves become one great family.

Slaves were never numerous in China, and of late years they have decreased in numbers. All China knows, says one writer, that an edict of the emperor was necessary to oblige his Tartars on duty to have slaves for domestic servants, and that this edict is hardly observed.

All modern writers agree that slavery still exists. Every native may purchase slaves, and the condition is hereditary. Freedom is forfeited by crimes or mortgaged for debt. Slaves are so few that they attract little attention. At Peking girls bring higher prices than boys, varying according to age up to eighteen years, from 30 to 200 taels. Needy parents sell their children

Williams ascribes the paucity of slaves to the existence of the competitive examination system. The widely diffused education, consequent on the preparation for the examinations by 2,000,000 of people every year has saved China, he thinks, from the feudal system, the villainage consequent thereon from the introduction of castes and the considerable extension of slavery. To deny that competitive examinations have had this beneficent tendency would be to contradict the experience of humanity touching the benefactions of education. But the same result in western countries is much more advantageously obtained by the common schools, which more than all else are the distinguishing glory of modern times.

It is probable that the patriarchal form of the Chinese Government, the primitive idea among the Chinese as among the Jews, that all the people constituted a great family, and the doctrine of the worship of ancestors, have more than the competitive examinations restricted the spread of slavery.

That slavery is tolerated by Chinese law will sufficiently appear from the statutes which, although fallen somewhat in disuse still exist. I quote a few of these laws.

By section 115 of the penal code a master soliciting and obtaining in marriage for his slave the daughter of a free man suffers eighty blows. Accessories are punished in like manner. A slave soliciting and obtaining a daughter of a free man in marriage is punished in like manner. If he receives the woman into his family he suffers one hundred blows.

A person representing falsely a slave to be free and thereby procuring such a slave a free husband suffers ninety blows. The marriages are in all such cases null and void.

Under section 313 a slave striking a free man shall be punished one degree more severely than is by law provided in similar cases between equals.

Entire disability so caused is punished by strangulation, and in event of death from the blow, the slave is beheaded. A free man striking a slave is punished one degree less than in ordinary cases, but he is strangled if death follows the blow.

Slaves striking or killing one another are punished as equals are.

Under the head of "slaves striking their masters," section 314, the punishments are very severe. For striking the master the punishment is beheading; for killing him, death by the slow process; for accidental killing, death by strangling; for accidental wounding, one hundred blows and banishment. For similar injuries to their master's relatives the punishments are reduced one degree.

If the master beats the slave to death for having committed a crime he suffers one hundred blows.

his life outside of all missionary

the coal mines west of Peking. Men are involved in gambling debts and then taken to a coal mine. Their lives and labor are mortgaged for the existing debt and for others subsequently created, and they remain slaves.

The Chinese have a great horror of this condition, and the law has done much to put a stop to this abuse, and in certain districts has succeeded. Mr. Crossette personally knows that large numbers of girls were carried off and sold into slavery during times of famine in the province of Shantung. A Chinese convert at Tsi-nan-fu sold his little daughter for \$16 to serve as a maid of all work in a rich man's family. Boys were not marketable. Another Christian sold his wife for \$2.50 to pay a debt of that amount.

Mr. Crossette says that there exists in some parts of China a peasant servitude, such as formerly existed in Russia.

CHARLES DENBY.

DRAWBACKS ON NATIVE CHINESE PRODUCTS.

[THE FOREIGN OFFICE TO MR. DENBY.]

Your Excellency: In January last the Prince and ministers had the honor to receive a note from your excellency in the matter of drawbacks on native produce exported from the Yangtze ports, wherein you observed that the rules in force seemed to be detrimental to the interest of foreign merchants, and you therefore requested that they be modified, etc. In regard to this matter the Yamên have repeatedly communicated with the northern and southern ministers-superintendent for foreign trade to instruct the several customs authorities under their respective jurisdictions to take under consideration the question as to whether or not a modification in the present system could be effected, and to present a report embodying the true facts of the case. These officers have now presented a report, as follows:

"When native produce is shipped at a river port the shipper must pay both export and coast-trade duty before he ships it. Drawbacks issued can be tendered in payment of coast-trade duties. This rule was adopted with a view to guard against shippers secretly carrying out schemes and smuggling. It has been in force for a long time. Moreover, when the special rules for tea were framed, some years ago, it was clearly made known that these could not be taken as a precedent governing other articles of native produce, and it was no easy matter to alter the established rules."

The Yamên would observe that in regard to this question, since there are in force fixed rules, it has not been convenient to suddenly make a change in them; but since your excellency has stated that they are working disadvantageously to the interest of merchants, and requested that they may be modified, the Prince and ministers could not but consider how an arrangement could be made, thus manifesting a desire to befriend the foreign merchants.

It is therefore proposed that from the fourteenth year of Kwanghsü, beginning on the 112th customs quarterly period (July 1, 1888), all drawback certificates issued before that date will be received in payment of all kinds of duties at the custom-house where they were issued. Drawbacks that were issued previous to that period will be received in payment of coast-trade duties at the office from whence they emanated. Under this rule on the one hand new drawbacks will not accumulate, and on the other hand old drawbacks can, from time to time, be all redeemed. This system will not prove detrimental to either the customs or the merchants—the modification made is just and equitable, of which the Prince and ministers believe your excellency will approve. — PEKING, *March 27, 1888.*

FOREIGN TRADE OF FRANCE.

The following table shows the foreign trade of France for the quarter ended March 31, 1888:

Articles.	Imports.		Exports.	
	1888.	1887.	1888.	1887.
Alimentary produce.....	\$77,412,000	\$77,308,000	\$28,185,600	\$33,196,600
Raw produce.....	96,961,400	107,135,200	33,948,200	32,358,600
Manufactured goods	26,692,600	27,027,600	82,117,000	78,319,600
Other merchandise.....	4,350,800	4,642,000	7,988,400	8,326,000
Total	\$205,416,800	\$216,112,800	\$152,239,200	\$152,200,800

HAVRE, FRANCE, *April 17, 1888.*

F. F. DUF AIS,
Consul.

SCOTTISH CATTLE COMPANIES IN THE UNITED STATES.

[DUNDEE ADVERTISER, FEBRUARY 29, 1888.—TRANSMITTED BY CONSUL WOOD.]

Of the half score or so of cattle companies the shares of which are altogether or largely held in the north and east of Scotland, the reports of all but two or three have now been issued for 1887. No report has yet been issued by the Western Ranches Company; but the company is a small one, and its experience for the year will not much affect the general result. Neither has any report been sent out by the Powder River Cattle Company. None need be expected. The company is in liquidation, with the view of getting itself reconstituted under a new and more attractive name; but unless the belief of its shareholders is much mistaken, its fate will be to wind up with the loss of all but a fraction of its capital. The reports which have been issued reveal quite as strikingly as the reports for 1886 an alarming sacrifice of capital. No year in the disastrous history of these companies has shown poorer results. Prices of cattle were never so low; so at least all the companies tell us, and there is ample evidence that they are telling the truth. Luck has been against the companies since 1883. One or other of the many evils to which, as shareholders know from bitter experience, the ranching business is heir, has duly made its appearance whenever prospects have begun to look fair. When the winter has been good the summer has been bad. When the drought has been on its best behavior the blizzard has been violent all over the plains. One company has been eaten up by wolves and another by squatters, and more than one have been the victims of patriotic litigants and still more patriotic juries. The one thing which has not varied has been the downward run of prices. In 1886 it was thought that prices had reached a phenomenal depth and must begin to rise. Last year they went to a still lower depth, and, though there is in all the reports a melancholy monotony of hopefulness that the turn will surely come this year, the expression of it does not brighten up faces at cattle companies' meetings.

The measure of the fall in 1887 from the average price-level of 1886 is well shown in the

Matador and Prairie companies

The sales of the Matador Company in 1887

steers of three years and over; £30,325 was realized for them, but if the prices had been as good as in 1886 the sum realized would have been more than £50,000. It is only natural that the cattle companies should hope that in this depth of depressed prices things should begin to mend. With all this difference between prices in 1886 and 1887 the actual losses of the companies on their year's working were light. No company earned a dividend, and, apart from the Pastoral Company, which showed a profit of £15,713 by taking credit for an assumed increase in the value of its cattle, the credit balances carried forward by all the companies in the lists below were £10,059. The debit balances were £25,454, so that the year's working of the eight companies whose reports have been issued resulted in a loss of £15,395. The money which these companies have invested in the cattle business is about three and three-quarter millions. Of this sum more than one million three hundred and thirty thousand pounds are held in debentures, on which interest at 4½ per cent. and upwards is paid. On the year's working, therefore, an exceedingly risky business, employing in round figures £3,750,000, paid a fair percentage on £1,330,000, and earned £15,395 less than nothing for the rest. The only comforting fact in the distressing matter is that apart from extraordinary losses carried on from year to year, and now at last confessed, the companies almost made ends meet. They were £15,395 short, but this insignificant item is hardly worth reckoning in the magnificent "deficiencies" to which the story of cattle ranching has made us accustomed. For example, the extraordinary losses recorded for the year were, as will be seen from the table below, very great. But they should have been acknowledged long ago. The balance-sheet of the Arkansas company contained fantastic assets for several years, and even yet it has not been made what it ought to be. The Swan Company wrote down its herd, and the value of it, as soon as it knew that it had been deceived; but its manager must have known several years ago that the entries were imaginative, and the heavy, extraordinary loss in the table, though it falls on this year, is of old standing.

	Profits.	Ordinary losses.	Extraordinary losses.
Matador Company.....	£1,763	.....	.....
Texas Company.....	.....	£936	.....
Hansford Company.....	23	.....	.....
Prairie Company.....	.....	4,991	.....
Arkansas Company.....	.....	4,820	£51,179
Swan Company.....	.....	.....	* 301,000
Cattle Ranch Company.....	8,273	.....	.....
Pastoral Company.....	† 15,713	.....	.....
Western Company.....	.....	14,707	.....
Total.....	£25,772	£25,454	£352,179

The year 1883 was a fairly good year for the cattle companies. There is no eternal reason why they should not get back to the scale of prices which were then in force. In that year the prices per head of the cattle sold were sufficient to pay handsome dividends to the shareholders. We have in the table below compared the returns per head in 1883 with those of last year. The return is for some of the companies a little misleading. The Matador Company, for instance, sold heavy cattle in 1883 and very young cattle and old cows in 1887. The Texas Company sold little but young cattle in 1883. Last year it sold mostly old cows and old horses and mules. But for the companies all over the comparison and contrast of the two years are fair enough. The companies together sold in 1883 46,086 cattle, at an average price per head of £5 12s 8d. They sold last year 55,613 cattle, at an average price head of £2 8s 7d. If the Matador figures be struck off 1887 for the large proportion of old cattle which they include, the average price for 1888 would be £2 12s 4d. If, therefore, 1887 had had been as 1883, the companies would have carried, not a loss on the year of more than

£15,000, but a gain of more than £160,000. The following are the prices per head obtained by the companies in the two years, in most cases on a smaller capital than now :

	1883			1887		
Matador Company.....	£6	3	0	£1	18	3
Texas Company.....	2	15	7	2	2	1
Hansford Company.....	2	14	10	4	1	1
Prairie Company.....	5	2	9	3	8	5
Arkansas Company.....	8	0	7	4	7	8
Cattle Ranch Company.....	7	8	8	4	3	1
Pastoral Company (1884).....	6	16	0	5	2	3
Western Company.....	5	19	8	3	17	10

The following table shows the profits earned by the companies in 1883:

	Profits.
Matador Company.....	£15,118
Texas Company.....	20,664
Hansford Company.....	13,231
Powder River Company.....	22,860
Prairie Company.....	59,013
Arkansas Company.....	14,134
Swan Company.....	37,695
Cattle Ranch Company.....	20,282
Pastoral Company (not formed).....	
Western Company.....	31,478
Total	£234,505

Shareholders in cattle companies have become accustomed to disaster. Investors in these concerns and in New Zealand mortgage companies have become so used to the export of British money for the benefit of needy, greedy, and scheming adventurers and distressed bankrupts on cattle and sheep ranches at the ends of the earth that new disasters hardly cause a flutter in the market. The Prairie Company's call of £60,000 has been received with a stoical indifference which is admirable. And truly it needs something of a stoic's indifference to bear well the losses set forth in the following table. They are the total confessed losses of the companies in the table to the end of 1887. The market price of the company's shares makes the total loss very much more than is here shown, but sufficient for the day is the evil thereof.

Matador Company	<i>nil</i>
Texas Company	£83,174
Powder River Company (approximate)	250,000
Hansford Company	82,367
Prairie Company.....	4,491
Arkansas Company.....	75,664
Swan Company.....	301,000
Cattle Ranch.....	114,450
Pastoral Company.....	13,316
Western Company	14,707
	£939,701

It is generally admitted that the companies which have a chance of recovering themselves ~~those which~~ hold land either as owners or under leases. Mere range rights for which

pany is that it has 16,000 acres of its own, and some land for which it pays a rent of £87, on which it can with any security graze its herd. It is thus at the mercy of any squatter who may come upon it. The Cattle Ranch Company pays £768 for rent, but does not show how much land it holds on lease. The table below shows the position of the companies in this important respect:

LANDS OWNED AND LEASED PER HEAD OF CATTLE.

	Acres.
Matador	7 1-5
Texas	5 1/2
Hansford.....	9 2/3
Prairie	2 3/4
Arkansas.....	4-5ths
Swan	10 5/8
Pastoral.....	10 1/2

It will be seen that so far as the possession of land goes the three Dundee companies are in a strong position. The large proportion of land to cattle in the case of the Swan Company is due to the fact that the herd of the company has been written down from 124,000 to 55,000.

TARIFF CHANGES IN SIERRA LEONE. — Consul Lewis reports that an ordinance was passed by the legislative council of Sierra Leone, on the 30th of December last, abolishing all export duties in African provinces, and also tonnage on vessels entering that port. On tobacco, manufactured, the import duty is reduced from 6 pence to 4 pence per pound, while that on claret wine is doubled, viz., from 6 pence to 1 shilling per gallon. On all goods that pay specific duties an ad valorem duty of 5 per cent. is levied.

Additional specific duties are levied on the following imports in the following amounts: Lumber, 8 shillings per 1,000 feet; hardware, 3 shillings per cwt.; salt, 3 shillings per ton; sugar, refined, 10 shillings per cwt.; sugar unrefined, 5 shillings per cwt.

TOBACCO IN CANADA.

For the twelve months ending March 31, 1888, there has been imported into Kingston leaf-tobacco valued at \$17,250. During the same period, of the same tobacco, \$11,631 in value has been returned to the United States.

I understand that it is foreign tobacco purchased in bond in New York city comes to Kingston, goes into bond, and is then exported to the United States, paying duty at Cape Vincent.

I do not understand why it should be profitable to bring tobacco to Kingston for distribution to the different cities of central New York. — KINGSTON, ONT., May 2, 1888.

EMIGRATION FROM HAMBURG.

The number of emigrants which went through the port of Hamburg was not so great for the year 1887 as for 1886, but exceeded that of 1885. For the past ten years the number of emigrants sailing from Hamburg each year has been as follows:

1878.....	24,803	1883.....	89,465
1879.....	24,864	1884.....	91,603
1880.....	68,887	1885.....	69,403
1881.....	123,131	1886.....	88,638
1882.....	113,221	1887.....	71,062

The total emigration for the last ten years through the port of Hamburg is 765,172. In the later years the number of business men and pleasure seekers has increased. The years 1881 and 1882 show much the largest emigration, owing to the persecution of the Israelite population of Russia. The emigration by way of Hamburg is by no means confined to the population of the German Empire, but is gathered in from most all the countries of continental Europe.

A peculiarity of the present emigration is the growing increase of indirect transportation by way of England. In the year 1885 the emigration by way of England was 14,365; while for the year 1886 it was 40,330, or nearly one-half of those departing from Hamburg. The cause of this large increase in indirect emigration is attributed to the steady and persistent efforts of the competing English lines of steamers for the transportation of emigration. During almost the entire year of 1886 the English lines fixed their rates from Hamburg to New York at 35 marks (\$8.55) per head.

Rigid and accurate statistics of emigration have been kept since the year 1846, and from that time to 1887 there departed from Hamburg 1,701,465 emigrants.

Doubtless local causes can often be assigned as reasons for the movements of these populations, but the prevailing and prominent cause is a desire to improve their condition by finding homes in a country of cheap lands and with greater resources yet to be developed. Political conditions may actuate a few to emigrate, but the overcrowded populations and the thoroughly developed conditions of their native lands influence the vast majority to seek homes in newer countries, abounding in limitless resources and elements of prosperity. — HAMBURG, *January 12, 1888.*

WM. W. LANG,

Consul.

THE TELEGRAPH IN FORMOSA.

The line of telegraph in Formosa has been completed from Keelung in the north, to Tai-wan-foo, in the south end of the island. As the cable

EPIDEMIC CHOLERA IN CHILI.

The effect of the large loss of labor through cholera has been severely felt. It has been difficult to obtain workmen for harvesting, mining and the railway extensions and improvements. Mere laborers on the railway in the Cordilleras, whose daily wages heretofore ran from 60 to 90 cents (paper) are receiving as much as \$1.40 (gold, or its equivalent). At Talcahuana many vessels, mostly English, have been lying long waiting for cargoes of wheat, which are not furnished for want of labor to harvest, transport and lade. — VALPARAISO, CHILI, *March 17, 1888.*

JAMES W. ROMEYN,
Consul.

PROPOSED SOUTH AFRICAN CUSTOMS UNION.

The want of an equitable and uniform system of customs tariff throughout the South African States and colonies has long been seriously felt, and has been the source of much irritating and futile competition. The subject occupied a considerable portion of the deliberations of the Cape of Good Hope Parliament at its session of last year, and culminated in an agreement to invite the Natal, the Orange Free State and the South African Republic to appoint delegates to meet those to be appointed by the Cape Government, with the object of discussing, and, if possible, devising means for the establishment of a South African Customs Union; and also to consider the subject of colonial railway extension to the north.

In accordance with this agreement a conference consisting of delegates from Natal, Cape Colony and the Orange Free State (the South African Republic not being represented,) convened in this city on the 1st February ultimo, and remained in session until the 18th ultimo. The proceedings of the conference were conducted in secret session; but the conclusions arrived at have just been made public through the columns of the Government Gazette. As in all probability the recommendations thus agreed upon will be ratified in due time by the governments represented in the conference, as well as that of the South African Republic, I deem it proper to transmit to the department herewith a full text of the proceedings of the conference.

Although the establishment of a customs union appears to have formed the primary object of the conference, that portion of its labor which relates to the construction of new railways will be viewed as of far greater importance by the outside world. According to the programme as outlined by the conference, the Cape Colony Railway system will be pushed forward from Colesberg, a point near the Orange River, about 550 miles northeast from Cape Town, and 355 miles north from Port Elizabeth to Bloemfontein, the Orange Free State, thence northeast

tended from Ladismith its present terminus. To effect this junction of the two colonial branches, as above indicated, will require the construction of about 400 miles of new railway which, for the greater part, will penetrate a country famous for its agricultural capabilities, its prodigious mineral wealth and its mild and salubrious climate. This immense tract of country is now but sparsely settled, and is only to be reached by wretched dirt roads and the slow locomotion of the ox wagon. To anticipate a teeming population to follow the opening up of this country by railroads calls for no stretch of imagination.

Although the government of the South African Republic was not represented in the conference, it is generally conceded that it will coincide with the recommendations made by the conference and co-operate in carrying them into effect by constructing her part of railway from the junction near the border of the Free State north to Pretoria and the principal gold mining centers. Thus a programme is laid out by which the fabulously rich gold districts of the transvaal and the contiguous territories to the north may, it is hoped, in the early future be reached by rail from a half dozen points on the South African seaboard; and it is confidently predicted by persons here whose opinions are considered worth having, that within two years from now this promising outlook will become a part in reality. When this is accomplished South Africa will awaken from her long sleep of lethargy and open her eyes to the light of the new destiny which is in store for her. Immigration will naturally follow the opening up of this country by new lines of railways, and a part of the great stream of Europe's surplus population constantly flowing westward will doubtless be diverted from the old channel and find its way to the new South Africa. — CAPE TOWN, *March 5, 1888.*

JAS. W. SILER,

Consul.

It is proposed that we should enquire into the practicability of a customs union. I assume unanimity of opinion as to the expediency of collecting customs duties for the purpose of raising a revenue, and that by no means can so large a revenue at present be raised. Customs duties are a source of revenue in all the civilized maritime countries of the world, however advanced may be their theoretical ideas regarding direct taxation, and that source is not likely to be abandoned here during the present generation.

The customs tariff of the Cape Colony may be regarded as high; and although it can not be said to be based on protective principles it is in some of its details protective in its operation. One of the questions to be submitted for your consideration involves what may in some respects be regarded as a recognition of the principle of protection. We are not in a position to set trade entirely free, but we may make an advance in that direction if we relieve the products of the countries joining the union from taxation, while at the same time we are obliged for revenue purposes to maintain the customs duties already imposed upon the great bulk of articles imported into the union from outside.

For the purpose of opening discussion, I desire to invite your attention to a few propositions relating to a customs union, assent to which it appears to me is necessary if any substantial progress is to be made. To establish

vide that the duties paid by the merchants throughout the union upon articles imported into the union from outside shall be uniform.

The duties so levied by the maritime colonies upon the articles consumed by the inhabitants of the inland states might then be paid over to the governments of those states, less a reasonable deduction towards meeting certain heavy charges incurred by the maritime states in the shape of harbor works, railways, postal and cable subsidies, and also the cost of collection. Such deduction may, for convenience, be called the transit charge. The way would then be open for an endeavor to establish free trade throughout the union in respect of the products of the colonies and states comprising the union. Suppose, for example, the Cape and Natal established a uniform tariff of 12 per cent. against the outside world, and agreed to retain a uniform transit charge of 3 per cent. on imported articles passing through each colony, there would remain 9 per cent. which might be handed over to the governments of the inland states in which the articles were consumed, provided that an equivalent rate were levied by the inland states on articles imported into them by any other route.

This proviso is essential; for, if the Cape and Natal agreed upon a uniform tariff of 12 per cent., and a uniform transit charge of 3 per cent., and were to agree to pay the balance of 9 per cent. to the governments of the Orange Free State or the South African Republic on articles passing into those states by those routes, the merchants in the Orange Free State and the South African Republic importing articles via the Cape and Natal would, like the merchants in the Cape and Natal, be subjected to a duty of 12 per cent. But if the same articles could be imported into the Orange Free State or the South African Republic via Delagoa, subject only to a Portuguese transit charge of 3 per cent., the saving to the merchants would divert the Orange Free State and South African Republic trade from the Cape and Natal ports to Delagoa Bay.

If, therefore, the South African Republic were not to levy 9 per cent. on articles imported from Portuguese territory it would be impossible for the Cape and Natal to enter into a customs union with her. In such case the difference between the tariff and the transit charge of the British colonies would have to be given as a rebate to the merchants in the South African Republic, so as to put imported articles upon the same footing there, whether coming from the Cape, or Natal, or Delagoa Bay. So, in like manner, if articles were imported into the Orange Free State from Delagoa Bay via the South African Republic, subject only to a Portuguese transit charge of 3 per cent., the Orange Free State would have to impose an import duty of 9 per cent. on its vaal border, or a customs union between the Orange Free State and the Cape and Natal would be impossible; for without such duty the 9 per cent. in the hands of the Cape and Natal Governments would have to be given as a rebate to the Orange Free State merchants.

If the South African Republic and the Orange Free State entered into a customs union with the Cape and Natal in the manner proposed, it is obvious that the merchants in all the four colonies and states would then be in the same position, paying 12 per cent. on all sea-borne imported articles. Trade would then be free to flow untrammelled through its natural channels, that is, by the shortest and cheapest routes. In such case the South African Republic would, of course, have to surrender to the Orange Free State the 9 per cent. on any imported articles entering the Orange Free State from Delagoa Bay via the South African Republic upon which the Government of the South African Republic had levied the 9 per cent. duty, and in like manner the Orange Free State would have to surrender to the South African Republic the 9 per cent. received from the Cape and Natal upon any articles passing from the Cape or Natal into the South African Republic via the Orange Free State, or the governments of those colonies would pay that amount direct to the Government of the South African Republic.

The first step, therefore, in the discussion will be for the delegates of the Orange Free State to realize that a customs union is not practicable if it is to consist merely of that state receiving

ciprocal obligations on both sides. It is impossible for the governments of the inland states to be allowed a proportion of the custom duties collected at the colonial ports, unless they impose similar duties on articles imported from other ports. If they are not willing to adopt this course the rebate must be given not to the governments of the inland states, but to the merchants; for otherwise it is obvious the inland trade would be diverted from colonial ports, and any agreement on the part of the colonies to pay the governments of the inland States a share of the import duties would simply remain a dead letter. The maritime states can not surrender what they do not receive. If the trade is diverted no duties will be collected, and consequently none will be handed over to the inland states. The sound policy for the Cape and Natal to pursue appears to be to establish a uniform tariff against the outside world, to retain a uniform transit charge on articles passing through to the interior, and to hand over the difference to either the governments or the merchants of the inland states, according as such governments do or do not enter into a customs union. The question of a free interchange between the Cape and Natal of the products of both countries might then be considered.

If the transit charge fixed upon by the Cape and Natal were the same as that levied by Portugal on articles passing through her territory into the South African Republic, it would follow that the merchants in the South African Republic and the Orange Free State would be subjected to the same duty whether the articles were drawn from the Cape, Natal, or Delagoa Bay, and trade would be free to flow through its natural and most economical channels. It may be doubted whether Delagoa Bay can at present be regarded as a competitor for trade fairly belonging to the Cape or Natal. In the event, however, of the Delagoa Bay railway being extended to Pretoria, there can be no doubt that it would materially increase the advantage already possessed by the superior geographical position of Delagoa Bay in relation to the inland trade. It is worthy of consideration whether Portugal might not be induced to enter with the Cape and Natal into an arrangement to levy uniform duties and retain a uniform transit charge, handing over the difference to the Government of the South African Republic. This would dispose of the great difficulty in the way of a customs union between the British colonies and the inland Republics. It would, besides, be no disadvantage to Portugal. All that the Cape and Natal desire is that they shall be placed at no greater disadvantage than that of distance which is inseparable from their geographical position. This can, of course, be effected in spite of all opposition, and the question to determine is whether it shall be effected by a rebate to the merchants or by a customs union. The scheme now suggested would meet the cases of British Bechuanaland and Basutoland. As to the former, the Government of that Crown colony would receive from the Cape the difference between the transit charge and the import duty collected at the ports, and would have in return to impose a similar import duty on articles entering British Bechuanaland from the South African Republic, unless the latter entered the customs union, in which case the Government of the South African Republic would pay to the Government of British Bechuanaland the same share of the duties on sea-borne imports entering British Bechuanaland from Delagoa Bay via the South African Republic, as the Cape would pay to it on goods passing into British Bechuanaland through the Cape.

As to Basutoland, the government of that territory has a legal claim upon the Cape Government to the extent of £20,000 a year towards deficiencies in its revenue, and actually receives £18,000 a year in lieu of a share of the customs duties on articles imported at Cape ports and consumed in Basutoland. As, however, Basutoland is largely supplied through the Orange Free State, if the Orange Free State entered into a customs union a deduction should in fairness be made from the payment by the Cape Government to the Government of the Orange Free State, equivalent to the estimated amount of the articles passing into Basutoland via the Orange Free State, otherwise the Cape colony would be paying on the articles con-

tariff remained at 15 per cent., and the Natal tariff at 7 per cent., Natal might, with the view of competing with Delagoa Bay for a share of the trade of the South African Republic and the Orange Free State, retain only a transit charge of 3 per cent., and give a rebate of 4 per cent. to the merchants in the interior. In such case the Cape would simply follow suit, and, retaining a transit charge of 3 per cent., give a rebate of 12 per cent. to the merchants in the extra-colonial territories; in which case the governments of those states would receive nothing. Whatever course is taken by Natal with the object of retaining her trade is equally open to the Cape colony. As, however, not only the maritime colonies, but also the inland states, require additional revenue to enable them to prosecute further necessary public works, a customs union of the character already described, with, as far as possible, a free interchange of local products, would be a far more advantageous arrangement for the inhabitants of South Africa than a "beggar-my-neighbor" policy, which seems to be the other alternative.

By way of illustration, a uniform *ad valorem* duty of 12 per cent. has been named, and 3 per cent. of that as the transit charge, but I do not wish to be understood as pledging the government to those amounts. The actual figures would depend very much upon the conclusion arrived at upon another most important question, which will engage the attention of the conference, viz., Northern Railway extension. The Cape ministry has already given an indication of its earnest desire in this matter, and it is prepared to listen to any proposals that may be made by the representatives of the neighboring countries, and to render every assistance in its power towards an object, the attainment of which will have such a material influence upon the future well-being of South Africa. Mention has been made of free trade in the products of the union. An approach towards that principle is made in the present Cape railway tariff, which places colonial products in a more favorable position than imported goods. In the event of railways being extended into the neighboring states the government would be ready to place the products of the other parties to the union upon the same footing as those of the Cape colony, so as to make the union one for commercial purposes. In the interests of both consumers and producers in the Republican States a main element in railway construction is the consideration of the nearest and cheapest routes to the sea coast.

The result of railway enterprise in the Cape colony would have been more favorable had the guiding rule in the selection of routes been the probable development of traffic; but, notwithstanding mistakes in the past, the considerable experience obtained by the Cape Government in the working of railways justifies the expression of a belief that, although the extension of the existing lines into new countries will not immediately be followed by the acquisition of a revenue sufficient to meet the whole of the charges incurred, yet the receipts on the Free State lines will probably go so far in that direction as to require not more than the amount which may be reasonably expected by the government of that country as it shares of the customs duties to supplement the deficiency.

The expansion of the gold mining industry across the vaal, with the consequent rapidly increasing population, opens a boundless prospect for the profitable investment of capital in the construction of main arteries for the conveyance of the traffic created by large centers of population. The time for action having arrived, we should now close our ranks, and push on with all our energies as one people moving in one way.

The conference is of opinion that the Orange Free State is entitled to a share in the customs duties collected on goods imported through the maritime colonies and consumed in that state. That it is desirable that there should be a customs union among all the colonies and states of South Africa on the basis—subject to certain limitations to be agreed upon—firstly, of an uniform tariff on all imported goods consumed within the union, and of an equitable distribution of the duties collected on such goods amongst the parties to such union; and, secondly, of trade between the colonies and states in respect of all South African products. That, with a view to furthering the ultimate establishment of such an union, it is further desirable that the colonies and states represented at this conference should, if practicable, initiate a customs union as among themselves on the basis therein laid down.

across its borders or through its seaports goods intended for consumption outside the union, duty free or at such rates as its own interests may demand. That the conference now proceed to the discussion of the uniform customs tariff to be levied, and the equitable distribution of the proceeds to be obtained under such tariff. That the following shall be the duties of customs levied upon goods imported into any part of the customs union:

a. On rated articles, viz:

	£	s.	d.
Ale and beer, per imperial gallon.....	0	1	0
Butter, per lb.....	0	0	3
Bacon and Hams, per lb.....	0	0	2
Beads, per lb.....	0	0	2½
Candles, per lb.....	0	2	0
Cement, per 400 lbs.....	0	0	3
Cheese, per lb.....	0	16	8
Chicory, per 100 lbs.....	0	1	0
Cider, per imperial gallon.....	0	2	0
Coals, coke and patent fuel, per ton.....	0	16	8
Cocoa and chocolate, per 100 lbs.....	0	12	6
Coffee, per 100 lbs.....			
Confectionery: Jams, jellies, bottled and tinned fruits, and manufactured sweets not being medicated or properly classed as apothecaryware, but including sweetmeats of all sorts, and other articles with which sugar is largely compounded for preserving purposes, the 100 lbs.....	0	16	8
Corn and grain of all kinds, per 100 lbs.....	0	2	0
Dates, per lb.....	0	0	2
Dynamite, per lb.....	0	0	3
Fruits, dried, per lb.....	0	0	2
Flour, wheaten, or wheaten meal, per 100 lbs.....	0	1	6
Ginger, dry, chow-chow, and other similar preserves, per lb.....	0	0	3
Gunpowder, per lb.....	0	0	6
Guns and gun-barrels, per barrel.....	1	0	0
Lard, per 100 lbs.....	0	12	6
Matches, wooden, in boxes or other packages containing not more than 100 matches, the gross.....	0	2	0
In boxes or other packages containing more than 100 and not more than 200 matches, the gross.....	0	4	0
Wax vestas and fusees, in boxes or other packages containing up to 50 vestas or fusees, the gross.....	0	2	0
In boxes or other packages containing up to 100 vestas or fusees, the gross.....	0	4	0
(and at the same rate for every additional 50 vestas or fusees)			
Meats, salt and preserved, in tins, cases, or otherwise, per lb.....	0	0	2
Mules, each.....	1	0	0
Oils of all descriptions, other than chemical, essential and perfumed, per imperial gallon.....	0	1	0
Paddy (known in Natal as coolie rice), per 100 lbs.....	0	1	6
Pistols or pistol barrels, each.....	0	5	0
Picks and hoes (Kafir), each.....	0	0	6
Rice, per 100 lbs.....	0	3	6
Salt, rock, per ton.....	0	2	0
	0	5	0

Spirits of all sorts not exceeding the strength of proof by Sykes hydrometer, and so in proportion for any greater strength per gallon, the produce of any state, colony, or territory within the customs union (subject to exceptions in paragraphs *d* and

<i>e.</i> per imperial gallon.....	0	4	6
Spirits (sweetened or perfumed), liquors and cordials, per imperial gallon.....	0	10	6
Sugar of all sorts (including molasses and concrete) other than the produce of Natal, or other state, colony or territory within the customs union, per 100 lbs..	0	12	6
Sugar, including molasses and concrete, the produce of Natal, or any other state colony or territory within the customs union (subject to the exception provided for in paragraph <i>e</i>), per 100 lbs.....	0	6	3
Tallow, per 100 lbs.....	0	4	2
Tamarinds, per lb.....	0	0	2
Tea, per lb.....	0	0	8
Tobacco, not manufactured, per lb.....	0	1	0
Manufactured (not cigars or snuff), per lb.....	0	2	0
Cigars, per lb.....	0	4	0
And for every £100 value.....	10	0	0
Cigarettes the lb (gross).....	0	2	0
Snuff, the lb.....	0	4	0
Turmeric, per lb.....	0	0	3
Turpentine, per gallon.....	0	1	0
Varnish, per gallon.....	0	1	0
Vegetables, preserved or pressed, pickles, sauces, and potted and bottled fish, per lb.....	0	0	2
Vinegar, per gallon.....	0	0	6
Wine, in bottles, each of not greater content than six to the imperial gallon, per doz. bottles.....	0	12	0
Wine, in bottles, each of not greater content than twelve to the imperial gallon, per dozen bottles.....	0	6	0
Wine, in other bottles, or in wood, the imperial gallon.....	0	6	0
Wine, claret, in bottles or in wood, per imperial gallon.....	0	3	0
Wood, unmanufactured, other than teak, per cubic foot.....	0	0	2
Wood, other than teak, planed or grooved, per cubic foot.....	0	0	3
Teak, per cubic foot.....	0	0	4

b. On *ad valorem* goods:

Agricultural implements (Kafir hoes and picks excepted), 10 per cent. Axles, bushes, springs and lamps for carts, carriages, and other wheeled vehicles, 10 per cent. Bags for flour, grain, coal, and wool, 7 per cent. Carriages, carts, wagons and other wheeled vehicles, including wheel-barrows, 10 per cent.

Corks and bungs, 10 per cent. Hops, 10 per cent. Iron, bar, bolt and rod, 10 per cent. Marble, 10 per cent. Metal composition and sheathing, 10 per cent. Oils (chemical, essential, and perfumed), 15 per cent. Rosin, 10 per cent. Soda (caustic), 10 per cent. Staves, 10 per cent. Tin, plate or sheet, 5 per cent.

Goods not above enumerated or described, nor otherwise charged with duty, and not prohibited to be imported or used in any state, colony or territory of the customs union, under any law in force on the 16th day of February, 1888, in such state, colony, or territory of the customs union, 12 per cent.

c. Duty free — the following articles, viz:

All raw produce of South Africa. All goods grown, produced, or manufactured within the customs union, excepting sugar molasses

imported for the use of Her Majesty's Imperial or Colonial forces, or forces of the States belonging to the Customs Union.

Animals, living (excepting mules). Anchors and chain cables, for ship's use.

Bones. Bottles of common glass imported full of wine, beer, or other liquid liable to customs duty. Books, printed, not being foreign reprints of British copyright works. Bullion or coin.

Carriages, carts, wagons, and other wheeled vehicles, the manufacture of South Africa. Cotton in its raw state.

Diamonds or other gems in their rough state.

Feathers, ostrich, undressed. Fencing wire, iron standards, and all materials intended to be used solely for the purpose of wire fencing. Fish*. Flowers of sulphur. Fruit, green, including cocoanuts.

Guano and other manures.

Hair*, viz.:—Angora. Hides*, ox and cow. Horns*, ox and cow. Horns*, wild animals.

Ice. Ivory*.

Machinery and the component parts thereof, viz.:—for agricultural, mining, sawing or manufacturing purposes. Maps and charts. Materials for use in construction of railways or tramways within the States, Colonies, or Territories forming the customs union. Materials for use in construction of telegraph lines within the States, Colonies, or Territories forming the customs union.

Paper for newspaper and book printing purposes. Photographs. Pig iron. Printers' and bookbinders' materials. Provisions or other stores for the regular forces in the service of her Britannic Majesty and the States belonging to the customs union.

Seeds, bulbs, or plants (garden). Sheep dip. Skins, viz.:—Goat, seal, sheep, wild animals. Specimens illustrative of natural history.

Tobacco, the produce of South Africa.

Wine, imported or taken out of bond for the use of military officers serving on full pay in the regular land and sea forces of Her Britannic Majesty and the States belonging to the customs union, and also for the use of officers of Her Majesty's navy serving on board any of Her Britannic Majesty's ships; subject, however, to such regulations as may be made; and provided that if any such wines shall be subsequently sold, except for the use or consumption of any such officers serving as aforesaid, the same shall be forfeited and liable to seizure accordingly. Wool*, viz.:—Sheep's.

d. As soon as the Government of the South African Republic shall (in accordance with agreement entered into between the Government of the South African Republic and the Government of the Colony of the Cape of Good Hope) have reduced the duty of customs chargeable on spirits made in any of the States Colonies or Territories of the customs union to the rate of 2s. per gallon, each State, Colony or Territory of the Union shall be at liberty to similarly reduce its duty of customs on spirits the produce of the South African Republic to 2s. per gallon: Provided that any State, Colony, or Territory availing itself of this liberty shall at the same time reduce its duty of customs on spirits made within the customs union to 2s. per gallon.

e. For a period of three years, from and after the establishment of the customs union, no duty of customs shall be charged within any State, Colony, or Territory of the customs union on spirits and sugars of all sorts, including molasses and concrete produced within any State, Colony, or Territory of the customs union, except by the colonies of the Cape of Good Hope and Natal.

the customs union may levy, for its own

wheeled vehicles imported and consumed or used within its own borders, and on no other goods, local duties of customs at higher rates than those imposed by paragraphs *a* and *b*, such additional local rates not to exceed —

On ale and beer, per gallon.....	£0	0	3
On claret	0	3	0
On flour, per 100 pounds	0	2	6
On carriages, carts, wagons, or other wheeled vehicles, per £100 value.....	10	0	0

Provided that customs duties have been levied on the said articles by the State, Colony, or Territory in question, prior to the commencement of the present conference; and provided, further, that this last limitation shall not necessarily extend beyond a period of three years from and after the establishment of the customs union.

Every State, Colony, or Territory in the customs union shall be bound to collect the duties of customs payable on all goods imported within its borders from outside the customs union, and to recover for and pay over to the government of any other State, Colony, or Territory belonging to the customs union, three-fourths of the customs union duties collected by it on goods exported to and consumed in such State, Colony, or Territory, and shall refund to the party exporting the said goods any local duties of customs collected on such goods in excess of the customs union tariff.

All goods upon which three-fourths of the customs duties have to be paid over by one State, Colony, or Territory of the customs union to another State, Colony, or Territory of the union shall be subject to such regulations as may be mutually agreed upon by the two States, Colonies, or Territories concerned for the purpose of securing their respective interests.

All goods, the produce of South Africa, passing through a State, Colony, or Territory within the customs union, free of duty, or goods imported by sea and passing through at special rates for consumption in countries outside the customs union, and all goods which are subject to a local duty and on which a rebate can be claimed by the exporting merchant, shall, as far as practicable, be conveyed towards their destination by the railway, and under regulations to be locally framed.

No duty of customs shall be levied by any State, Colony, or Territory of the Union on spirits, or sugars of all sorts, including molasses and concrete, the produce of any State, Colony, or Territory of the customs union, on being passed through any State, Colony, or Territory of the customs union for consumption in any other State, Colony, or Territory of the Union, or beyond the limits of the Union.

Every State, Colony, or Territory of the customs union charging local duties of customs in excess of the Union tariff shall invest every other State, Colony, or Territory of the customs union with all the authority which may be necessary for the collection of such local duties on goods being forwarded across its borders on to the State, Colony, or Territory charging such local duties, and the forwarding State shall thereupon be bound to collect such local duties and refund them, together with three-fourths of the duties collected on such goods under the union customs tariff to the State, Colony, or Territory receiving such goods.

All accounts as between the States, Colonies, and Territories of the customs union shall be made up to the last day of each quarter of the calendar year, and all such accounts shall be adjusted within two months from that date.

Under such local regulation as may be prescribed in that behalf, a rebate of customs duty may be allowed to the wholesale consumers of sugars for the manufacture of jams, preserves, and confectionery; Provided that no premises on which the brewing of beer or distillation of spirits is carried on shall be licensed for the manufacturing of jams, preserves, and confectionery; and provided, further, that any such rebate shall not exceed 5s. 3d. per 100 lbs.

Except in cases of duty paid in excess or error, no rebate or refund of any sum in respect of duty paid, or bounty or gratuity in respect of any dutiable article, will be made or allowed by any State, Colony, or Territory within the customs union, on grounds other than those enumerated in the resolutions arrived at in the present conference.

Upon mutual agreement between the Governments of all the States, Colonies, and Territories of the customs union, it shall be open to the customs union to prohibit the importation into the customs union or into any State, Colony, or Territory within the customs union of articles other than those the importation of which is already prohibited by existing local acts.

In cases where tolls are collected in any State, Colony, or Territory within the customs union, on roads, pontoons, bridges, or borders, such tolls shall be the same in all cases in respect of the inhabitants of any other State, Colony, or Territory within the customs union as are charged by the State, Colony, and Territory imposing these tolls on its own inhabitants.

Notwithstanding anything contained in the resolutions agreed to by the conference it shall be competent for the Governments of the Cape Colony and Natal to enter into any arrangement they may deem expedient with respect to the ultimate appropriation of the customs duties collected upon goods imported into the customs union at the port of St. John's into Pondoland, for consumption in that Territory.

That the customs union proposed shall be called "the South African Customs Union," and its terms shall, if agreed to by the Governments and Legislatures of the countries belonging to it, be embodied in a convention to be signed by the chief governing officers of such countries, and come into operation on the 1st of January, 1889, and continue until the 31st of December, 1891; after which the customs union shall be continued for a further period of three years, unless six months prior to the 31st of December, 1891, notice shall have been given by any party to the customs union its wish to terminate its connection with the union; but in such case it shall be open to the customs union to continue, as regards the parties who do not so give notice, and it shall be at the option of any party not having given such notice to convene a conference for the purpose of considering the terms upon which the customs union shall be so continued.

The delegates of the State and Colonies represented at the conference agree to submit the resolution arrived at by this conference to their respective governments, as embodying the basis upon which under existing circumstances a customs union is considered practicable.

When the customs union shall have been established by legislation and convention, it shall be competent at any time during the existence of the union for any South African State, Colony, or Territory not belonging to the union, and having a civilized government to apply for admission; and upon such government signifying its acceptance of the conditions of the customs union, and its passing the requisite legislation to give effect to such conditions, it shall be admitted, provided the parties to the customs union are by a majority of at least two-thirds in favor of such admission: Provided, further, that such application for admission shall be made six clear months before the accession to the customs union of any such State, Colony, or Territory can take effect, and that no such accession can operate prior to the 1st day of January or July in any year, as the case may be.

Should the conditions of the customs union be found in practice to require amendment, it may be affected with the unanimous consent of the governments of the countries comprised within the customs union; and in the event of such consent not being unanimous, it shall be open to any government comprised within the customs union, on giving six months' notice to convene a conference for the purpose of discussion, with a view to the amendment of such conditions.

That the conference having learned the points of junction and the scheme of railway extension favored by the Orange Free State delegates, and that the execution of any scheme is dependent on the receipt of their share of customs, is of opinion that as soon as the Government and Legislature of the Orange Free State shall declare its readiness forthwith to construct the Orange Free State lines as intimated, the lines of the Colony of the Cape of Good Hope and of the Colony of Natal should be so extended as to enable the proposals of the Orange

The conference recommends that the junction of the extension of the Natal system with the proposed central line through the Orange Free State shall be effected at the point of the central line nearest to Bethlehem and Ventersburg.

The conference recommends that all materials for railway construction in the Orange Free State shall be carried over Cape and Natal lines at rates not to exceed the estimated cost of transport.

The conference deems it necessary that the same gauge be preserved in the railway construction of the Orange Free State as is at present in use in the Colonies, viz., 3 feet 6 inches.

The conference recommends that prior to the construction of any section of the proposed Orange Free State railways, the different governments interested in their working shall appoint a joint commission, including experts in railway management, to draft the terms and conditions of a convention under which such railways shall be worked, in which convention the following subjects amongst others should be dealt with :

a. The mutual use and reciprocal rights of and to railway bridges on the Orange River, and the cost of maintenance thereof.

b. The regulation of the railway service where the special interests of both parties may at any time differ from each other.

c. The regulation of tariffs on through traffic, and the modification thereof where special rates may become desirable, and providing for equal rights and privileges for all parties to the convention.

d. Postal service.

e. The mutual duties, rights, and powers of the respective governments regarding railways.

That as between the Orange Free State, Cape Colony, and Natal, no higher railway rates shall be charged upon goods or produce coming from either State or Colony than are charged upon the same class of goods or produce within either of such Colonies or State into which or through which such goods or produce may pass.

MANUFACTURE OF STRAW-BRAID IN CHINA. — Consul Smithers, of Tientsin, transmits the following details concerning the manufacture of straw-braid in his district:

The cultivation of wheat-straw, from which the braid is worked, and the manufacture of straw hats for water use, has been a special industry in the northern provinces of China for more than a century. It was not, however, until after Tientsin was opened to foreign trade that the farmer began to pay much attention to the cultivation and curing of the straw, so as to secure greater uniformity of color, as well as fineness of quality. The great desideratum is to obtain as perfect a white straw as possible by means of bleaching in the sun. The process is to pull up the plants by hand when the grain is in the milk and only about half developed. Great care must be taken to prevent exposure to rain. After bleaching the straw is cut at the first joint from the top, all below that joint being useless for making braid.

The industry extends through the great provinces of Chihli, Shansi, Honan, and Shantung, and gives remunerative employment to great numbers of the poorer classes, principally to women and children. It is said that a dexterous woman can make from 35 to 40 yards of braid per day, earning from 14 to 20 cents.

The first shipment of braid to the United States was made about the year 1873, when 35 bales were shipped. In 1886 the shipments amounted to 6,766 bales, and will reach, it is thought, 12,000 bales in 1887, 6,000 having been shipped during the second quarter of that year. There are 240 bundles in a bale, each bundle containing 165 feet.

The principal varieties are known as white and black Shingkee, Shansi, Shantung mottled, and Honan mottled. There are many others.

TARIFF CHANGES IN ITALY.

By a royal decree just issued the duties in Italy on preserved and pickled fish will be raised from May 1, 1888, as follows :

On fish pickled in brine or oil, including, tunny in boxes, the duty is raised from 25 lire (\$4.82) to 30 lire (\$5.79) per quintal. (1 quintal = 220 $\frac{1}{3}$ pounds.)

On fish pickled in brine or oil, including tunny, preserved in any other manner, the duty is raised from 10 lire (\$1.93) to 30 lire (\$5.79) per quintal.

This may affect to some extent the American fishing industry. —ROME, April 17, 1888.

CHARLES M. WOOD,
Vice Consul-General.

KEROSENE IN CEYLON.

The steamship *Glendower* brings the first consignment of Russian kerosene oil that has reached this port, and further regular shipments are expected by Messrs. Freudenberg & Co. If this oil can be landed here in quantities to suit the trade, it may in time supersede the American article, which can only be brought here in full sailing-vessel cargoes. We should, however, prefer to see India and Ceylon obtaining their oil from Burmah rather than from Russia. — *Times of Ceylon*, January 11, 1888.

The first shipment of this oil, about 30,000 cases, expected per steamship *Glendower*, has been sold, and we hear that a further lot of 20,000 to 30,000 cases to be shipped per steamship *Glengoil*, due here from Batoum about the middle or end of April, is now offered for sale by the same importers. — *Times of Ceylon*, February 11, 1888.

The *Straits Times* has the following :

There are said to be nineteen shipments of Russian kerosene oil from Batoum now on their way to India. According to a Bombay paper this sudden development of a new trade is due to the Muscovite having profited to an unexpected extent by the mistake committed by American shippers, who mixed an unconscionable quantity of water with some recent shipments of oil for the Indian market. Batoum oil is more crude than the product of the Pennsylvania wells, but for burning in lamps it is practically quite as good as, and is at all events better than, water. At first the native dealers, conservative in all his instincts, hesitated to take the Russian oil instead of the American, to which he had become accustomed. But the greater cheapness of the cruder oil has resulted in its wide use, and the doubt thrown on American oil by the unfortunate shipments of an adulterated article to Calcutta seems to have given the advantage to the Russian oil.

Whether our "wooden nutmeg" friends have been trying the same little game on with the oil imported into Ceylon we do not know, but the first consignment of Russian oil has already reached Colombo and been sold. When is Burmah going to supply the Indian market with oil? — *Times of Ceylon*, March 19, 1888.

The above paragraphs are not strictly true, nevertheless they allude to a subject of great interest to American exporters, inasmuch as kerosene oil being the principal commodity sent from the United States to the east, anything affecting its status here has an important bearing on the industry.

It is true that about 13,000 gallons of Russian kerosene, packed in cases containing each two four imperial (nominally five gallon) cans, closely imitating American packages, were imported here from Batoum, via Bombay, last

consignment above stated, no Russian kerosene has been seen here, and there is none in the place now.

The last cargo of American oil (60,000 cases) sold at an average price of 3.75 rupees per case, and was delivered here in August, 1887. Since then the importations have been inconsiderable, owing to a desire among the importers to avail themselves of the Russian oil, which it appeared could be delivered here at a price better than 6 per cent. below that of American oil.

This suspension of imports led to a scarcity of oil, causing an enhancement in price, thus facilitating the introduction of the Russian product to this market.

The "Daylight" brand of American oil is now retailing at 7.50 rupees per case, and "Regent" at 5 rupees per case, say \$2.55 and \$1.70, respectively. This great difference in price, however, is abnormal, as hitherto it has usually been about \$0.35 per case in favor of "Daylight" oil.

In my Report No. 130, May 11, 1881, I pointed out how this (then new) market for kerosene might be stimulated and held by American dealers. The import then was only 7,000 cases or 56,000 gallons per annum, whereas last year 54,000 cases or 432,000 gallons were imported, a result, by the way, far surpassing my own prediction, and accomplished spontaneously without any special effort on the part of American shippers or manufacturers. — COLOMBO, *March 20, 1888.*

W. MOREY,
Consul.

RUSSIAN KEROSENE IN CHINA.*

During the month of January, 1888, a cargo of about 50,000 cases of Russian kerosene or refined petroleum arrived at and was sold in the port of Hong-Kong, and the greater portion of it has found its way into the Province of Kwang-tung, and much of it has been sold to Chinese shop-keepers and native consumers at a price about equal to that of American kerosene.

Some of it has been bought and is being consumed by foreign residents, as it is sold for a superior high test and safe oil.

The cans are stamped thus: "The Batoum, Naptha and Trading Company," with the red anchor and crescent marks.

It is sold by reputable Hong-Kong foreign merchants to Canton buyers at \$2.25 per case, containing 2 cans, each of which is the size of the American cans, holding about 4 imperial gallons, or 5 trade gallons, and as having a test of 130°, while ordinary American kerosene is sold as being safe at only 110°. Probably neither of the two oils (American or Russian) have been tested in China. — CANTON, CHINA, *March 23, 1888.*

CHARLES SEYMOUR,

TRADE AT NEWCHWANG.

There is a decrease in the imports of American drills which is attributed partly to over-importation in 1886, partly to the dissatisfaction of dealers with recently imported goods, many of which bear new trade-marks and are said to be inferior to the standard of former years.

It behooves American manufacturers and exporters to look to this, especially in view of the increased import of English drills and sheetings.

Woolen goods, crape lastings, and lustres are gradually going out of consumption, being too flimsy for the market. Other items are steadily increasing. This is especially noticeable in the case of long ells, used for making bed coverlets and for covering cushions in reception rooms; and of camlets and cloth used in making coats and jackets. It appears that the development of these provinces by immigrants from the south is giving rise to a class who prefer wearing cloth jackets to those made of the commoner sorts of furs, and it is probable that in the near future the import of woolen goods, especially cloth, will be one of the principal items in the trade of this port.

There is a falling off in the export of hides, due to a decline in the home markets. In skins, especially dressed dog and goat, business has been unprofitable, and the dealers have in many instances endeavored to recoup themselves by false packing for the difference between actual cost of the goods and prices paid by exporters. A large number of these dealers have failed and involved many dealers in raw skins and some of the local banks.

In wild silk (raw refuse and cocoons) there is a great increase, but this is due to the determination of the usual buyers to maintain the control of this article, even if they pay more than the equivalent of Shanghai prices.

The increase in beans is due to large crops and low prices in this district coinciding with a partial failure of crops in the south; in bean oil, partly to the above causes, partly to the likin on kerosene oil in Kwang-tung; in wool, licorice, and tobacco, to low cost here and good demand in the south.
—NEWCHWANG, *March 16, 1888.*

J. J. FREDK. BANDINEL,
Vice-Consul.

VANCOUVER, B. C.

As some months have elapsed since I have reported upon the new town of Vancouver, and that town is increasing in importance so rapidly, I give here a few lines descriptive of its commerce and progress.

Those especially interested in this flourishing town claim that it has now a population of 8,000 souls. In my judgment 6,000 would be nearer the

There are three steamers, one of over 1,000 tons register, plying between Vancouver and Seattle, the principal port on Puget Sound. These continually carry full freight to and fro, semi-weekly trips.

The regular steam-packets between San Francisco and Puget Sound ports (weekly trips), touching here inward and outward, proceed to Vancouver from Seattle, delivering and receiving much cargo from and for San Francisco.

The steamers from Orient to Vancouver, now arriving about every twenty days, will, it is said, soon make schedule semi-weekly trips, calling at San Francisco on the return trip.

These vessels are of large size. They are the *Batavia*, *Port Victor*, *Abysinia*, *Port Augusta*, and *Parthia*. The last arrived at Vancouver on the 9th instant, thirteen days and six hours from Yokohama, with 2,000 tons freight, mostly for United States ports, San Francisco, Seattle, Portland, Oreg., New York, Baltimore, and other ports, designing to proceed to San Francisco to land her freight and passengers destined for that port. But I have just received a telegram from the health officer of San Francisco which leads me to believe that she will have to submit to quarantine at that port the same as if she had just arrived direct from China, which may detain her.

I would state as noteworthy that she brought 221 Chinese, of whom 113 are for San Francisco, 56 for Portland, Oreg., and 18 for Seattle. I presume they all have custom-house return certificates.

During the period from June 15, 1887, to March 29, 1888, the Orient steamships have brought in all 183 Chinese to Vancouver, as per report of consular agent there.

During December quarter, 1887, merchandise from United States ports to United States ports in bond, eastbound, passed through Canada, via Vancouver*, as follows, giving values only:

Beans.....	\$81,085	Horns.....	1,200
Fish.....	9,781	Electric machinery.....	3,310
Fruit.....	56,031	Barks.....	1,200
Coffee.....	43,921	Rattan.....	1,100
Hops.....	12,775	Oil-clothing.....	2,629
Wool.....	407,392	Total.....	620,426

During January and February, 1888, 7,409,490 pounds of flour from California and Oregon† left Vancouver for China and Japan by the Orient steamers.

The *Batavia*, which sailed on the 4th instant for the Orient, took 1,369 tons American merchandise, as follows: Flour, 1,276,568 pounds; domestics (5,850 bales), 1,417,670 pounds; 20 boxes organs; 5 street cars; 41 cases machinery; 10 cases electric fixtures; 11 cases school text-books; 13 cases lamps; 1 case watches; 8 cases household goods; 2 hogsheads crockery, and 3 bales rattan core.

The yield of ore from the mines of the province is now considerable. Some 15 invoices were declared at Vancouver during the last two

quarters, 10 of silver, 5 of platinum. This principally from near Illicilae-wait. The output from the mines of anthracite coal at Bauff is also increasing. I some time since in reporting upon this coal (in my despatch No. 278, of date August 12, 1887), upon representation by others, intimated that it nearly approached in quality the Lehigh of Pennsylvania. Personal inspection causes me to modify that statement. It is, however, fairly good anthracite, and authority for saying that its quality will improve as the quantity increases in output, and the present scarcity of all coal enhances its reputation. I am indebted for the foregoing statistics to the consular agent at Vancouver. — VICTORIA, *April 12, 1888.*

ROBT. J. STEVENS,
Consul.

PROPOSED RAILROAD IN CHEKIANG.

There is no railroad in this (Chekiang) province, nor is there any prospect of any in the near future. Last May a proclamation was issued by H. E. Li Hungch'ang, viceroy of the province of Pechihli, asking subscriptions for the completion of the railroad from K'aiping to Tientsin. This proclamation caused a good deal of discussion among the Chinese here as to the building of railroads and investing money in them. So far as I could find out there was no one here who took stock. Their opinion seemed adverse to building railroads. They argue that the building of railroads would throw many laborers out of employment, also interfere with their shipping, and perhaps one of the greatest obstacles in the way of railroad building here would be the removal of the dead from the graves that would be in the way of the survey for a road. — NINGPO, *March 30, 1888.*

THOS. F. PETTUS,
Consul.

PROCLAMATION ISSUED BY LI-HUNG-CHANG, VICEROY OF PECHIHILI, CALLING UPON THE PEOPLE OF THE CHEKIANG PROVINCE TO BUY SHARES IN THE RAILROAD TO BE CONSTRUCTED BETWEEN TIENTSIN AND K'AIPING.

The extension of the existing railroad at K'aiping to Tientsin will be of advantage to the Government and convenient to the people. The railroad company will not be connected with mining company at K'aiping. The rules compiled by the managers and shareholders have been sent me by the directors, Wu Va'otai and others. The company will be carried on in a strictly commercial manner, and the officials connected with it will only protect its rights and see the concern directed honestly.

A capital of 1,000,000 taels is to be raised; printed prospectus for shareholders have been distributed, and in case they do not meet with faith in distant places I have issued this proclamation. It must be understood that railroads are in use in all foreign countries. Our people who have travelled have seen with their own eyes the advantages, and wherever are railways the trade will flourish. All rich people in foreign countries invest their money in railroad stock as an inheritance for their children. China, in following the example of foreign countries in all her matters, should be saving and deal honestly with the shareholders. When a profit is realized by the railroad company it will be divided justly among the stockholders and the managers are not to profit thereby. This is important to the Government, and the officials

must see that it will be lasting and worked honestly. All the work must be carried on as in

FOREIGN CORPORATIONS IN VENEZUELA

[TRANSMITTED BY CONSUL BIRD.]

Resolution.—Various formalities being followed in foreign countries for the formation of anonymous stock companies, the President of the Republic, with the vote of the Federal Council, has deemed proper to order, that when such companies pretend to domicile themselves and acquire legal status in Venezuela, in the act of registry of the document attesting their organization according to the formalities of their respective country, thus complying with the prescriptions of the code of commerce, they shall pay the sum of 2,000 bolivars (384.62 in United States currency), once only, without reference to the amount of their capital stock.—LAGUAYRA, April 24, 1888.

Communicate and publish it.

By the Federal Executive.

PEDRO ARNAL.

ALCOHOL IN FRANCE.

PRODUCTION.

The quantity of alcoholic spirits extracted by distillation from wine—for a long time the only distillation consumed in France—has been gradually diminishing, in consequence of the ravages caused by phylloxera and mildew in the vineyards of France, falling from 18,148,000 gallons in 1871 to 515,000 gallons in 1886; and to meet the ever growing demand for spirits this distillation has been replaced by alcohol distilled from molasses, beet root juice, grape skins, and from miscellaneous farinaceous substances, especially maize and potatoes.

The spirits produced in France are now for the greater part distilled from molasses. From 1840 to 1850 the average yearly production amounted to 1,057,000 gallons. It now reaches 18,492,000 gallons, or nearly two-fifths of the total production.

The distillation of beet root juice is also very important, producing alcohol of a good quality. The annual production in the period between 1840 and 1850 did not exceed 13,209 gallons. It now reaches 13,000,000 gallons; but nevertheless it now seems to be decreasing slightly, and it is replaced by the distillation of grain.

The production of alcohol extracted from grain, which, before the year 1845, did not amount to a great deal throughout France, began to increase about that year, after a severe disease had greatly reduced the yield of the potato crop. It was stationary till the year 1876, but it is now five times greater than then, maize especially being used for distillation. In 1873 the quantity produced was 2,298,000 gallons; in 1884, 12,812,000 gallons, and in 1885 reaching 14,899,000 gallons.

The distillation of potatoes, introduced into France some sixty years ago, has never gained a great importance. In 1873 the production of said spirits reached 246,000 gallons; in 1885 it was reduced to 103,000 gallons.

The following comparative statement shows the production of alcohol distilled from wine and other substances from 1876 to 1886:

Years.	Alcohol extracted by distillation from—					Total.
	Wines.	Molasses.	Beet roots.	Farinaceous substances.	Other substances.	
	<i>Gallons.</i>	<i>Gallons.</i>	<i>Gallons.</i>	<i>Gallons.</i>	<i>Gallons.</i>	<i>Gallons.</i>
1876.....	14,424,000	18,756,000	6,446,000	2,668,000	2,853,000	45,147,000
1877.....	4,174,000	16,986,000	7,212,000	4,306,000	1,902,000	34,580,000
1878.....	5,098,000	17,092,000	8,744,000	4,755,000	1,744,000	37,433,000
1879.....	2,721,000	19,126,000	9,616,000	6,551,000	1,294,000	39,308,000
1880.....	713,000	18,122,000	11,333,000	10,910,000	687,000	41,765,000
1881.....	898,000	18,122,000	14,873,000	13,367,000	872,000	47,132,000
1882.....	581,000	18,598,000	14,688,000	11,808,000	1,004,000	46,679,000
1883.....	608,000	19,866,000	16,616,000	14,846,000	1,189,000	53,125,000
1884.....	925,000	20,579,000	15,031,000	12,812,000	1,770,000	51,117,000
1885.....	608,000	19,258,000	12,284,000	15,005,000	2,087,000	49,241,000
1886.....	528,000	12,409,000	18,069,000	20,869,000	2,271,000	54,146,000

The following table indicates the quantities of alcohol produced by licensed distillers and by landowners engaged in distillation from 1875 to 1885 inclusive:

Years.	Quantities produced by—		Total.
	Licensed distillers.	Land owners and farmers.	
	<i>Gallons.</i>	<i>Gallons.</i>	<i>Gallons.</i>
1875.....	38,887,000	9,958,000	48,845,000
1876.....	37,195,000	7,952,000	47,147,000
1877.....	30,960,000	3,620,000	34,580,000
1878.....	33,285,000	4,148,000	37,433,000
1879.....	37,089,000	2,219,000	39,308,000
1880.....	41,105,000	660,000	41,765,000
1881.....	47,312,000	819,000	47,131,000
1882.....	45,780,000	899,000	46,679,000
1883.....	52,068,000	1,057,000	53,125,000
1884.....	49,479,000	1,638,000	51,117,000
1885.....	47,419,000	1,823,000	49,242,000

The continuous decrease in the production of wines has been generally counterbalanced by an increase in the production of alcoholic spirits, as is shown in the following exhibit:

Years.	Wines.	Alcohols.	Years.	Wines.	Alcohols.
	<i>Gallons.</i>	<i>Gallons.</i>		<i>Gallons.</i>	<i>Gallons.</i>
1869.....	1,849,190,000	37,274,000	1878.....	1,287,274,000	37,433,000
1870.....	1,440,651,000	32,678,000	1879.....	680,766,060	39,308,000
1871.....	1,503,154,000	42,294,000	1880.....	783,713,000	41,765,000
1872.....	1,324,994,000	49,955,000	1881.....	901,850,000	47,132,000
1873.....	943,510,000	37,618,000	1882.....	815,916,000	46,679,000
	668,108,000	40,071,000	1883.....	951,778,000	53,125,000
					51,117,000

The quantities of alcohol produced undoubtedly exceed the figures set forth in the above statement, as, since the law passed in 1875, which released landowners and farmers from the obligation of making the declaration required from licensed distillers and exempted them from the frequent inspection of revenue officers, there has been a greater facility to defraud the government by making false declarations as to the quantities actually produced.

IMPORTS AND EXPORTS.

In the same time that the production of spirits in France gradually augmented, imports of alcohol, especially from Germany, also greatly increased.

The following table shows the imports and exports of spirits from 1872 to 1886 inclusive:

Years.	Imports.	Exports.
	<i>Gallons.</i>	<i>Gallons.</i>
1872.....	1,268,000	11,889,000
1873.....	1,270,000	10,789,000
1874.....	1,624,000	7,971,000
1875.....	1,622,000	9,187,000
1876.....	1,730,000	10,171,000
1877.....	2,557,000	5,796,000
1878.....	3,566,000	6,300,000
1879.....	5,283,000	7,054,000
1880.....	6,921,000	5,925,000
1881.....	6,314,000	6,079,000
1882.....	7,568,000	5,180,000
1883.....	4,425,000	5,732,000
1884.....	5,072,000	5,680,000
1885.....	5,178,000	5,664,000
1886.....	6,023,000	5,558,000

The above figures of imports do not exactly represent the quantities of spirits annually imported into France.

German alcohol of bad quality is to a very great extent mixed with Spanish wines entering France, but which only pays the duty imposed upon wines. This alcohol is afterwards extracted from them, and sold at cheaper prices than French and other foreign alcohols.

IMPORT DUTY.

The import duty levied upon alcohol entering France has been raised, by a law passed on the 5th of July, 1887, from 30 francs to 70 francs per hectoliter of pure alcohol (22 to 51 cents per gallon). This increase of the duty was considered as a kind of retaliatory and protectionist measure against Germany, where a premium of 44 cents per gallon was allowed by the Government to exporters of domestic alcohols as a reimbursement of the internal tax, while this tax was only 15 cents per gallon.

INTERNAL TAXES.

The following exhibit shows the rate of the internal taxes per gallon of pure alcohol in France and other European countries:

Denmark	\$ 20	Belgium.....	\$ 54
Austria.....	20	Sweden.....	79
Italy.....	22	France.....	1 14
Germany	24	Russia	1 77
Roumania	31	England.....	3 61

CONSUMPTION.

The following comparative statement will show for different periods of time the correlation between the rate of the internal tax on alcoholic spirits, the taxed quantities of pure alcohol, the products of the tax, and the price and consumption of alcohol from 1830 to 1885 inclusive:

Years.	Quantities of pure alcohol on which the tax has been paid.	Amount of taxes collected.	Rate of the tax per gallon.	Average price of spirits per gallon.	Consumption per inhabitant.
	<i>Gallons.</i>				<i>Quarts.</i>
1830.....	9,642,000	\$3,899,000	\$ 40	.....	1. 19
1831 to 1854.....	13,670,000	4,149,000	27	.....	1. 53
1855 to 1859.....	21,001,000	9,650,000	44	\$ 70	2. 38
1860 to 1870.....	24,013,000	16,308,000	66	51	2. 54
1871 and 1872.....	23,353,000	22,137,000	10	48	2. 59
1873.....	24,673,000	28,566,000	1 14	42	2. 74
1874.....	25,624,000	31,092,000		55	2. 84
1875.....	26,918,000	32,964,000		39	2. 97
1876.....	26,417,000	32,482,000		40	2. 86
1877.....	27,183,000	33,428,000		50	2. 95
1878.....	29,058,000	35,821,000		46	3. 15
1879.....	30,670,000	37,828,000		46	3. 33
1880.....	34,711,000	42,653,000		50	3. 85
1881.....	38,146,000	45,857,000		46	4. 13
1882.....	37,512,000	45,143,000		41	4. 10
1883.....	38,203,000	47,150,000		37	4. 19
1884.....	39,334,000	47,380,000		32	4. 23
1885.....	38,146,000	45,992,000		34	4. 07

The preceding statement was prepared by the Ministry of Finances, and represents but imperfectly the real average of alcohol consumers. It does not embrace the quantities of alcohol produced by land owners and farmers, nor alcohol fraudulently distilled or introduced into France; and besides, a large part of the population, especially women and children, consume but a small quantity of spirits. Consequently it is to be inferred that only one-eighth of the total population of France drink spirits, and therefore their consumption of alcohol per capita must be eight times greater than that shown in the statement.

1829 was 297,812, reached 399,145 in 1885. The following statement shows for the last ten years the number of public drinking houses and the proportion of inhabitants for one public drinking house :

Years.	Total number of public drinking houses.*	Proportion of inhabitants for one public drinking house.	Years.	Total number of public drinking houses.*	Proportion of inhabitants for one public drinking house.
1873.....	342,622	109	1881.....	367,875	103
1876.....	343,139	108	1882.....	372,537	101
1877.....	349,598	107	1883.....	377,514	100
1878.....	350,697	106	1884.....	386,835	96
1879.....	354,852	105	1885.....	399,145	94
1880.....	356,863	104			

*Statistics do not give the number of public drinking houses in Paris. That number may be estimated at about 30,000, or one public drinking house for 75 inhabitants.

In 1873 a law was passed enacting penalties against intoxicated persons found in the streets, in public drinking houses, or in any other public place, and against those selling liquors to them. The number of convictions under that head for the past twelve years has been as follows:

1873.....	59,347	1879.....	65,989
1874.....	86,418	1880.....	60,714
1875.....	98,482	1881.....	67,379
1876.....	91,560	1882.....	68,934
1877.....	84,893	1883.....	69,506
1878.....	71,972	1884.....	68,072

INSANITY.

The following statement, prepared by the Ministry of the Interior, shows the total number of insane persons admitted into public asylums, and the number and percentage of persons whose insanity has been caused by the abuse of spiritous liquors:

Periods.	Total number of insane admitted in asylums.			Number of persons insane by the abuse of spiritous liquors.			Percentage.		
	Men.	Women.	Total.	Men.	Women.	Total.	Men.	Women.	Total.
1861-'65	8,494	6,489	14,983	1,256	183	1,439	14.8	2.8	9.6
1866-'70	10,911	8,480	19,391	2,057	266	2,323	18.9	3.1	12.0
1871-'75	11,814	10,149	21,961	2,785	466	3,251	23.6	4.6	14.8
1876-'80	21,644	18,178	39,822	4,759	1,130	5,889	22.0	6.2	14.8
1881-'85	27,731	23,476	51,207	6,075	1,311	7,386	21.9	5.6	14.5

COTTON MACHINERY IN NINGPO.

There has been in operation here for more than three years forty treadle-gins (a description of them, I think, has been furnished by Mr. Kennedy, United States Consul-General).

Until some two months ago these gins were worked in a large building near this consulate. They take up but little space, about 18 inches wide and 30 inches long, made of iron manufactured in Japan. A company was organized in the spring of last year to build and have larger gins worked by steam. This building is now finished, situated about two miles from this consulate on the opposite side of the river (northwest). The building is of brick, foreign built, about 300 feet by 200 feet. It is cut off into various apartments, a ginning-room, packing-room, drying-room, office, etc.

The steam-machinery is now being put in place. The boiler is 60 inches wide, some 15 feet long, cylinder 12 inches, 22-inch stroke, can be made to equal 30-horse power. In the ginning-room I found the 40 hand-gins worked with a treadle placed in 4 tiers, 10 in a tier. One man works a gin. The work is hard, as frequently the man has to throw his whole weight on the treadle. They work the gin eighteen hours a day, the output being 240 pounds seed-cotton or 80 pounds lint-cotton for each gin. These gins are manufactured in Japan, and are an improvement on the little treadle-gin used by the cotton-growers. This little contrivance has two cylinders 10 inches in length, the upper cylinder an inch in diameter, of smooth round iron, worked by a pedal or crank. At the further end of it is attached a narrow board with its ends weighted, so that it acts like a fly-wheel. The lower cylinder is 2 inches or a little more in diameter, made of maslieh wood unsmoothen. The cylinders are parallel and so close as to only allow the lint to pass through, dropping the seed on the inside. The lower cylinder being unsmooth catches the cotton and forces it through. I have seen these little machines worked by eight-year old children.

These Japanese gins, instead of two rollers, have two pieces of iron one and a half inch wide, one-eighth inch thick, dull sharpened on the edges, when the cotton passes through running outside of the stationary pieces of iron. A little above the center of the space between the knives through which the cotton passes is a leather cylinder. The leather forming the cylinder is glued upright. The cylinder is on the outside, and works against the stationary knives. Consequently it is a little rough, catches the cotton, pulls it through, leaving the seed on the inside. The gins to be run by steam are much larger, being 42 inches wide, and the leather cylinder 40 inches long and nearly 4 inches in diameter. There are twelve of them to be worked by steam-power. What their capacity will be I cannot say. These gins clean the seed better than our saw-gins. I compared our seed with them. The

from the seed-cotton before it is ginned. I have visited this new enterprise several times for the purpose of gaining information. I find that the stockholders are native Chinese; that after a good deal of opposition they have been granted the privilege of building and working steam machinery for the sole purpose of buying and ginning cotton, selling also some of the seed. They have agents in the cotton belt purchasing seed-cotton and transporting it to the gins. The cotton when ginned is packed into cotton domestic sacks, weighing 160 pounds. The sacks are as bulky as a ball of our cotton. The present price of this cotton is 16 Mexican dollars per bale, or about $7\frac{3}{4}$ cents per pound, our currency. Most of it is sold here, some shipped to Hong-Kong. The cotton that is brought here is shipped to the different ports of China, and is spun and woven by hand-wheel and the old primitive loom, and after being woven dyed generally a blue color, this color being universally worn by the poorer classes. I have called attention of the stockholders to our saw-gins, as I am satisfied that one of our 100-saw gins would do more work in a day than the twelve gins (gin-heads) can do in the same time. I have also called their attention to our cotton-presses. They ought to use the latter by all means, but the Chinaman is slow to adopt improvements. He has to take a long time to consider. This is the only cotton-gin in China, except the little cotton-machines used by farmers who raise cotton. This company informs me that if they are successful here they will establish one in Shanghai. The profits are more particularly in the sale of the seed. This is used for fertilizing, oil, and feeding stock. They find ready sale for the seed at 5 or 6 Mexican dollars per picul or 4 bushels, whilst our cotton planters sell at 60 cents to 80 cents per 4 bushels. The staple of the cotton here is short, from half an inch to five-eighths of an inch in the general run. I hope this new enterprise will be a success. — NINGPO, *April 8, 1888.*

THOS. F. PETTUS,
Consul.

COMMERCE OF TRIPOLI.

The commerce of Tripoli in 1886 reached the sum total of over 20,000,000 francs, almost equally divided between imports and exports, the former exceeding the latter by about 1,000,000 francs. As compared with 1885 both the volume of exports and imports show a decline of 10 to 15 per cent.

The development of the extensive relations of Tripoli with foreign countries is mainly due to a system of easy credit accorded to the importers. This, however, is subject to spasmodic contractions, when even the most solvent firms are looked upon with a certain degree of suspicion and distrust.

Merchants and manufacturers desirous of establishing trade with Tripoli will always have to be liberal in extending credits; but the utmost scrutiny and discretion should prevail in according them, and great judgment should be exercised to avoid trusting too implicitly commission merchants and agents who without

Some of the articles which might be profitably imported from the United States are alcohol, canned provisions, carpenters' tools, furniture, hardware, iron bedsteads, lamps, locks, mechanics' tools, patent medicines, printed cottons, sewing machines, stoves suitable for petroleum, wood for building, and building materials, Yankee notions, etc.

Alcohol and rum come largely from the United States, Austria and France ranking next. The amount imported during 1886 was estimated at about 175,000 francs. Iron, steel, copper, tin, lead, zinc, etc., are supplied by England, France, Austria, Belgium, and Germany. Paper is imported from Austria, Germany, France, and Italy. Woolen fabrics come mainly from England, Germany, and Austria. Skins and leather are supplied by France, a small quantity also coming from Italy.

Hardware, small tools, etc., of American make would find a ready market. Germany almost wholly monopolizes this branch, her share of this trade amounting to very nearly 100,000 francs, while all other countries combined furnish but about 30,000 francs.

In woolen yarns there is considerable activity, there being many hand looms in operation for the weaving of woolen stuffs for interior and local consumption.

The following statement shows the value of imports from all countries during the year 1886:

	Francs.		Francs.
Wheat.....	525,000	Gold and silver ware	77,000
Barley.....	80,000	Iron and hardware.....	310,000
Beans	33,000	Arms and ammunition.....	80,000
Peas	10,000	Metals and metal goods.....	39,000
Rice.....	155,000	Skins (raw and tanned).....	66,000
Flour.....	25,000	Charcoal.....	72,900
Oil	405,000	Hard coal.....	63,000
Provisions	865,000	Wood (fuel).....	77,000
Woolen stuffs.....	1,475,000	Soap	37,000
Cotton yarns.....	775,000	Perfumes and extracts.....	74,000
Cotton stuffs.....	3,700,000	Hardware	127,000
Silk stuffs.....	210,000	Amber (real and imitation).....	54,000
Raw and waste silk	182,000	Indigo.....	50,000
Wine.....	63,000	Achat (real and imitation)	113,000
Alcohol and spirits.....	60,000	Paper.....	33,000
Glassware	175,000	Drugs and pharmaceutical products.....	77,000
Earthenware, Fayence, etc.....	50,000	Ornaments, jewelry, etc.....	15,000
Wood (building).....	130,000	Horses and cattle.....	34,000
Building materials.....	17,000	Tobacco.....	335,000
Furniture.....	25,000	Gunpowder.....	64,000
Wool.....	50,000		
Total.....			10,808,000

The exports during the same year were as follows:

	Francs.		Francs.
Alfa.....	3,740,000	Fruits.....	96,000
Ostrich feathers.....	3,824,000	Soap	12,000
Ivory.....	840,000	Woolen and cotton stuffs	234,000
Grain	118,000	Henna (dyeing stuff).....	83,000
		Silver ornaments.....	26,000

The imports were distributed among the following countries:

	Francs.		Francs.
United States.....	71,500	Austria.....	595,000
Great Britain	5,577,000	Italy	531,000
Turkey.....	1,331,000	Switzerland.....	225,000
Tunis.. ..	995,000	Belgium	138,000
Germany	688,000	Egypt.....	35,500
France	601,000		
Total.....			10,808,000

The annexed table shows the maritime movement during the year 1886:

Nationality.	Arrived.		Cleared.	
	Ships.	Tons.	Ships.	Tons.
British.....	99	54,416	96	52,426
Turkish	228	19,112	206	18,884
Italian	102	57,580	101	57,114
French.....	64	63,974	64	63,974
Greek.....	30	1,278	27	1,217
Tunisian	79	1,279	79	1,279
Montenegro	14	1,575	14	1,575
Egyptian.....	2	440	2	440
Total.	618	199,654	592	196,909

The trade figures for 1887 are not yet accessible; but it is believed they will scarcely reach those of 1886, as commerce in general has been stagnant throughout the entire regency. — BEIRUT, *April 12, 1888.*

ERHARD BISSINGER,
Consul.

CANTON RIVER OBSTRUCTIONS.

The Tsungli Yamên has refused to order the removal of the obstructions in Pearl River, near Canton. The foreign ministers do not accept the decision as final. — PEKING, *March 19, 1888.*

CHARLES DENBY.

REPORT OF THE IMPERIAL EMIGRANT COMMISSIONER FOR 1887.*

[TRANSMITTED BY CONSUL-GENERAL RAINE.]

The total number of German and foreign emigrants forwarded from the three German ports of Hamburg, Bremen, and Stettin shows again an increase. Since the transportation of emigrants from the German ports has been supervised by an imperial commissioner, it has been regularly observed that, except in 1870-'71, when affairs were influenced by the war, emigration would increase for a number of years and then decrease again for some time. In 1872 emigration reached the highest number, 154,284, decreased 1877 to 41,824, reached again in 1881 247,336, and fell 1885 to 155,147. 1886 and 1876 witnessed another increase. It is noticeable that the proportion of German to foreign emigrants during the different years was not the same. The number of emigrants not German increased from 1881 to 1886, but decreased in 1887, while the number of German emigrants receded between 1881 and 1886, and rose again in 1887.

* A general report on emigration.

From German ports were forwarded:—

Year.	German emigrants.	Foreign emigrants.	Total.
1871.....	75,912	26,828	102,740
1872.....	124,534	30,290	154,824
1873.....	100,040	32,377	132,417
1874.....	43,536	32,144	75,680
1875.....	28,707	27,874	56,581
1876.....	23,880	20,720	50,600
1877.....	20,128	21,696	41,824
1878.....	23,241	23,130	46,371
1879.....	29,238	22,520	51,763
1880.....	94,966	54,803	149,769
1881.....	184,369	62,967	247,336
1882.....	169,216	62,524	231,740
1883.....	143,951	57,363	201,314
1884.....	126,511	68,986	195,497
1885.....	88,900	66,247	155,147
1886.....	66,647	99,827	166,474
1887.....	79,473	92,779	172,452

Since July 1, 1887, a new law relative to emigrants, and an order of May 13, 1887, have been enforced in Hamburg. According to the new law a larger space than heretofore must be allowed to steerage passengers, namely, 2.85 cubic meters, against 72 cubic feet (former Hamburg measure), in which case a steerage deck height of more than 2.40 meters is taken as only 2.40 meters. The minimal height of the spaces is fixed at 1.83 meters. Besides this a certain space on the upper deck is provided for, which must be left free for the steerage passengers for exercise in fresh air. The companion way and the stairs leading to the steerage must be widened and increased wherever they do not correspond with the provisions of the act. The width of the berths must be likewise enlarged. The number, size, and equipment of small boats and other safety measures are also prescribed.

In former years the introduction of a provision which made it obligatory to furnish passengers indirectly forwarded by way of an intermediate English port with full board caused considerable opposition on the part of a majority of shipping agents. It was therefore expected that the new act, which provided that no distinction shall be made in the treatment of passengers forwarded directly or indirectly, might cause a shrinkage in indirect transportation, considered so objectionable in many respects; but the report shows that notwithstanding this law a considerable number of emigrants were forwarded by the indirect way.

A regular rigid inspection of all vessels shipping emigrants indirectly is provided for in the new act, while the old law did not make such inspection obligatory.

In consequence of the new act the passengers' rooms, boats, deck surfaces, etc., of all vessels employed in passengers' traffic, both for direct and indirect shipment, had to be remeasured. In each steerage room a notice is put up showing the cubic capacity, as well as the number of the persons to be sheltered in such room, so that passengers can easily convince themselves whether or not more persons than the law allows are in the room. At each inspection the number of the sleeping berths located in the single rooms is ascertained, and a corresponding

entered into the protocol of supervision.

with tables and benches, free for the use of the passengers. Similar arrangements are made on the mail steamers of the North German Lloyd of Bremen, which are placed on the East Asiatic and Australian lines.

EMIGRANT BOARDING HOUSES.

At the lodging-houses for emigrants at Hamburg, which heretofore were greatly inferior to the majority of the Bremen lodging-houses, many improvements have been made last year. The double rows of sleeping berths, which formerly were allowed in the lodging-houses, are gradually done away with. Every emigrant boarding-house keeper requires new confirmation annually, and is ordered to abolish double berths. Thus far six of the least desirable lodging-houses have ceased to exist, and two others are expected to disappear in 1888.

In each Hamburg lodging-house notices, composed in seven different languages, are put up, reading as follows: "Emigrants receive protection and advice gratuitously at the emigration office at Hamburg, No. 75 Neuerwall, 2d floor, which is open daily from 9 to 6 o'clock." It has been noticed that in North America the custom to buy passage tickets for emigrants from Europe is apparently on the increase, entailing many evils. Such tickets are bought mostly upon the statement that they are intended for relatives of persons already residing in America. Whether such statement is always true, or whether the fellow countrymen living in America wish to procure in this manner only laborers, who in consequence of the advanced passage money are perhaps compelled to enter into a many years contract, can not be controlled here, the emigrants either refusing all information whatever, or, as it is mostly the case, asserting that they are to follow their relatives, who have found a good living on the other side of the ocean. Worse is the circumstance that the immigrant agent residing at New York sells passage tickets payable in instalments. As soon as the first instalment has been paid by the transmarine ticket buyers the European emigrant concerned receives an order for a free ticket, to be presented at the seaport to a forwarding agent stationed there. If the ticket buyer in America has in the meantime paid for the ticket in full all is right; but if he has not done so, the American agent telegraphs to the forwarding officer on this side of the water that the order in question is to be ignored. In the meantime the emigrant, owing to information received, has perhaps broken off all his connections with his old home and may already be on the way to the shipping port, where want and distress await him. Some of such cases have in reality occurred.

Irrespective of the deplorable total loss of the North German Lloyd steamer *Oder*, on her trip from East Asia to Europe, the German passengers' ships have not met with disaster, and escaped epidemic diseases last year.

The inspection of emigration vessels and of lodging-houses took place in the same manner as in previous years, in most cases jointly with the supervisory authority appointed for the port concerned. Thus all emigrant vessels of the three German ports, Hamburg, Bremen, and Stettin, have been inspected.

Since the 1st of July, 1887, when the introduction of obligatory inspection of all vessels employed in indirect shipment, via English ports, went into force, Hamburg's supervisory labors increased to such an extent that the imperial commissioner of emigration had to confine himself in some instances to a mere superinspection, almost every week cases occurring when four-fifths of the vessels had to be examined on one and the same day.

The embarkation and sheltering of emigrants on board of the vessels have been supervised as much as possible. In quartering passengers on shipboard frequently difficulties arose in the case of single travelers, especially females, who objected to occupy separate apartments, and attempted to remain with families or even persons of the other sex, whom they either knew at their homes or whose acquaintance they made on the way to the port of departure. Notwithstanding, the prescribed separation of the sexes on board of the vessels has been enforced in all cases.

928 vessels, via Hamburg, 71,007 persons; in 199 vessels, via Bremen, 99,476 persons; in 11 vessels, via Stettin, 1,969 persons. Of the vessels on board of which they were forwarded, 1,127 were steamships and 11 sailing vessel. The latter were, however, not considered emigrant vessels, shipping but few passengers and not subjected to supervision. Of the persons forwarded via Hamburg, were 45,454 persons directly shipped in 157 steamers; 24,453 persons indirectly shipped in 599 steamers; 1,100 persons in 161 steamers and 11 sailing vessels, not being emigrant vessels; in all, 71,007 persons, of which were 44,261 males and 26,746 females; or 37,028 adult men, 19,775 women, 5,476, boys, and 5,131 girls, between one and ten years, and 1,757 male and 1,840 female nurse children; or 34,298 persons in 10,579 families, 38,747 single male and 7,962 female persons.

Directly forwarded were 28,437 persons in 60 trips by the Hamburg-American Packet Steamship Company; 14,403 persons in 47 trips of the Union line; 2,614 persons in 50 trips by the forwarding agent Lobedaur, and 1,100 persons in 171 trips on vessels carrying less than 55 passengers; in all, 46,554 persons.

In 1887 71,007 persons emigrated, as follows:

January.....	2,293	July	6,585
February	2,908	August.....	6,792
March	6,191	September.....	6,484
April	6,021	October	7,018
May	10,033	November	6,059
June.....	7,071	December	3,552

From non-European ports 9,841 persons returned to Hamburg, among them 32 lacking the required means of support were refused landing in North America. Of these 32 persons, 11 were natives of Germany, 9 of Prussia, 10 of Austria, and 2 of Denmark. Other persons lacking means of support arriving from England in Hamburg were Austrians, 4; Russians, 400; Roumanians, 4; Swedish, 1, and 2 Chinese.

Of 99,476 persons forwarded via Bremen, 99,350 persons were shipped directly in 196 steamers of the North German Lloyd, and 126 persons indirectly via Leith and Glasgow. Among these persons there were 57,128 males and 42,348 females emigrating in the following months of 1887:

January.....	2,436	July.....	6,810
February.....	4,770	August.....	8,733
March.....	11,392	September	8,830
April.....	13,108	October	9,379
May	14,547	November	7,067
June	9,940	December.....	2,474

From non-European ports returned to Bremen, 26,020. For want of means of support none were refused in North America, but among them were some people whose condition did not conform to the requirements of the emigration laws of New York.

Via Stettin, in all, 1,969 persons were directly forwarded in 11 steamers, all to New York, Among them were 987 male and 982 female persons, viz: 1,331 adults, 523 children between one and twelve years of age, and 115 nurse children. With the exception of February, a steamer left Stettin every week during the year with emigrants. One hundred and sixty-eight persons returned from New York to Stettin, but among them were none whose landing was refused in America.

The vessels from Stettin were compelled on account of their draught to take their last freights and equipment at Swinemünd. Passengers were carried in small steamers or by rail

Total emigration via German ports in the year 1887.

From which countries.	Number sailing from —			Number sailing to —										Total.		
	Bremen.	Hamburg.	Stettin.	United States.	British North America.	Mexico and Cent. Amer.	West Indies.	Brazil.	Argentina.	Peru.	Chili.	So. America.	Africa.		Asia.	Australia.
.....	9	1	.....	7	.....	.....	.....	.....	1	.....	.....	.....	.....	1	1	10
.....	2,125	1,779	11	3,523	5	2	26	115	161	.....	3	4	6	6	64	3,915
.....	12	20	.....	25	.....	.....	.....	2	1	.....	.....	.....	3	.....	1	32
.....	27	27	.....	35	2	.....	.....	4	5	.....	.....	.....	1	4	3	54
.....	30	104	.....	64	.....	1	.....	11	38	.....	1	2	3	1	13	134
.....	4	4	.....	4	.....	.....	.....	.....	4	.....	.....	.....	.....	.....	.....	8
.....	93	18	.....	28	.....	.....	1	6	10	.....	.....	.....	.....	64	2	111
.....	6,839	2,850	94	9,690	2	1	1	54	10	.....	5	17	.....	.....	3	9,783
.....	4,004	5,830	30	9,537	31	6	.....	90	165	6	11	5	2	.....	11	9,864
.....	8,678	9,598	59	18,305	2	.....	.....	6	20	.....	.....	1	.....	.....	1	18,335
Austria-Hungary.....	19,521	18,278	183	37,532	35	7	1	150	195	6	16	23	2	.....	15	37,982
.....																
.....	.....	11	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	10	.....	.....	11
.....	52	1,014	.....	1,007	51	.....	.....	1	7	.....	.....	.....	.....	.....	.....	1,066
.....	6,873	22,482	199	28,418	234	4	.....	42	762	.....	3	12	25	7	47	29,554
Norway.....	5,387	672	45	5,676	2	.....	.....	302	46	.....	.....	4	2	1	71	6,104
.....	171	73	.....	191	.....	.....	.....	12	12	.....	.....	.....	12	9	8	244
.....	5	3	.....	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8
.....	2	1	.....	2	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	3
.....	1	128	.....	129	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	129
.....	.....	6	.....	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6
.....	9,614	3,084	6†	12,665	.....	.....	.....	2	16	.....	.....	.....	7	1	13	12,704
.....	260	654	.....	158	6	14	15	246	192	4	38	58	43	42	98	914
.....	44,186	48,359	444	89,479	335	28	43	893	1,451	10	61	103	114	136	336	92,989
.....	55,290	22,648	1,535	76,115	268	54	44	920	809	17	135	125	302	226	458	79,473
.....	99,476	71,007	1,979	165,594	603	82	87	1,813	2,260	27	196	228	416	362	794	172,462
.....																
.....	99,476	.....	.....	97,070	.....	.....	.....	608	675	.....	.....	.....	20	318	785	99,476
.....	.....	71,007	.....	66,545	603	82	87	1,205	1,585	27	196	228	396	44	9	71,007
.....	.....	.....	1,979	1,979	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,979

† As country of origin is given merely "North America," or "America."

• Inclusive of travelers forwarded on emigration ships.

German emigrants via German ports to transmarine countries during the year 1887, showing country of origin and distribution.

States or provinces of origin.	Number of emigrants from the German Empire.			Departures via Bremen.	Departures via Hamburg.	Departures via other Prussian ports.	Number going to the United States of America.		Number going to British North America.		Number going to Mexico and Central America.		Number going to the West Indies.	
	Male.	Female.	Total.				Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
East Prussia.....	926	836	1,762	938	714	110	883	812	18	16	1	2	1	.....
West Prussia.....	5,992	5,986	11,978	8,579	3,036	363	5,931	5,939	26	25	1	2	.....	.....
Brandenburg (with Berlin).....	2,367	1,887	4,254	2,069	2,029	156	2,047	1,725	9	9	4	2	2	.....
Pomerania.....	3,480	3,242	6,722	4,388	1,706	628	3,410	3,193	10	12	1	.....	.....	.....
Posen.....	4,455	4,235	8,690	5,939	2,531	220	4,411	4,196	18	25	.....	.....	.....	.....
Silesia.....	1,587	1,165	2,752	1,612	1,109	31	1,437	1,112	2	8	1	.....	3	.....
Saxony.....	2,256	1,907	4,163	860	557	6	2,080	1,826	14	9	7	.....	4	.....
Schleswig-Holstein.....	3,461	2,528	5,989	5,071	3,473	5	3,288	2,459	6	3	2	.....	3	.....
Hanover.....	869	592	1,461	1,288	918	.....	813	564	5	5	3	.....	1	.....
Westphalia.....	1,688	1,472	3,160	2,757	173	.....	1,623	1,436	2	4	.....	.....	2	.....
Hessen-Nassau.....	1,867	544	2,411	1,222	403	.....	777	518	.....	.....	.....	.....	1	.....
Rhineland.....	16	19	35	23	12	.....	15	19	.....	.....	3	.....	.....	.....
Hohenzollern.....	4,256	3,629	7,885	7,279	596	10	4,173	3,603	2	.....	.....	.....	.....	.....
in the right of Rhine Palatinate).....	395	366	761	729	32	.....	386	363	.....	.....	1	.....	.....	.....
arg.....	1,312	917	2,229	1,364	861	4	1,149	858	.....	.....	.....	.....	1	.....
arg-Schwerin.....	2,355	2,005	4,360	3,748	612	.....	2,304	1,979	.....	.....	.....	.....	.....	.....
arg-Strelitz.....	725	765	1,490	1,290	200	.....	683	754	.....	.....	.....	.....	.....	.....
arg.....	888	720	1,608	1,401	207	.....	865	709	6	10	1	.....	.....	.....
arg.....	766	653	1,419	427	990	2	714	618	.....	.....	.....	.....	.....	.....
arg-Schwerin.....	205	127	332	257	75	.....	195	125	.....	3	.....	.....	.....	.....
arg.....	86	69	155	85	70	.....	84	66	.....	.....	1	.....	.....	.....
arg-Strelitz.....	540	456	996	944	52	.....	511	445	.....	.....	.....	.....	.....	.....
arg.....	141	89	230	153	77	.....	115	84	.....	.....	.....	.....	.....	.....
arg.....	133	96	229	181	48	.....	132	96	.....	.....	.....	.....	.....	.....
arg.....	38	20	58	30	28	.....	32	18	.....	1	.....	.....	.....	.....
arg.....	126	101	227	203	24	.....	123	101	.....	.....	.....	.....	.....	.....
arg-Gotha.....	54	34	88	56	32	.....	41	32	.....	.....	.....	.....	.....	.....
arg-Sondershausen.....	27	22	49	41	24	.....	25	22	.....	.....	.....	.....	.....	.....
arg-Rudolstadt.....	45	36	81	57	24	.....	45	36	.....	.....	.....	.....	.....	.....
arg.....	42	47	89	80	9	.....	41	47	.....	.....	.....	.....	.....	.....
arg.....	24	18	42	36	6	.....	21	16	.....	.....	.....	.....	.....	.....
arg.....	62	41	103	74	29	.....	59	41	.....	.....	.....	.....	.....	.....
arg.....	15	16	31	25	6	.....	15	16	.....	.....	.....	.....	.....	.....
arg-Lippe.....	46	42	88	86	2	.....	45	40	.....	.....	.....	.....	.....	.....
arg.....	60	45	105	20	85	.....	48	36	.....	.....	.....	.....	.....	.....
arg.....	530	469	999	924	75	.....	460	450	.....	.....	.....	.....	.....	.....
arg.....	1,122	792	1,914	1,632	1,632	.....	743	653	6	.....	.....	.....	.....	.....
arg.....	63	42	105	87	18	.....	56	40	.....	.....	.....	.....	.....	.....
arg.....	42,880	36,593	79,473	55,290	22,648	1,535	40,543	35,572	132	136	47	.....	7	13

German emigrants via German ports to transmarine countries during the year 1887, etc. — Continued.

States or provinces of origin.	Number going to Brazil.		Number going to the Argentine Republic.		Number going to Peru.		Number going to Chili.		Number going to other South American States.		Number going to Africa.		Number going to Asia.		Number going to Australia and Polynesia.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
Provinces—East Prussia.....	13	5	1	1							2	2			5	1
West Prussia.....	16	14	4								3				8	4
Brandenburg (with Berlin).....	73	37	86	43.							30.	7			41	24
Pomerania.....	10	19	21	8.							3				15	7
Posen.....	8	8	6	3							4				5	5
Silesia.....	72	27	21	1							18	6			25	6
Saxony.....	19	12	34	11							6				32	18
Schleswig-Holstein.....	21	21	38	22							30	4			33	13
Hanover.....	46	22	34	22							30	3			5	1
Westphalia.....	24	23	10	1							2				8	6
Hessen-Nassau.....	12	9	18	5							1				10	
Rhineland.....	33	10	28	13							6					
Hohenzollern.....																
Provincia (on the right of Rhine Palatinate).....	23	4	41	18							3	1			8	1
Prussia.....	2	2	2	1							2				1	
Prussia.....	62	22	41	21							11	1			23	7
Prussia.....	14	8	11	3							8	6			10	8
Prussia.....	15	7	14	2							5	1			3	
Prussia.....	6	3	6	3							1				9	3
Prussia.....	15	17	13	4							4				4	1
Prussia.....	4	1	2												4	
Prussia.....																
Prussia.....	9	1	7	8							1				9	3
Prussia.....	6	1	10	2							1				6	1
Prussia.....																
Prussia.....	1	1	2												1	
Prussia.....																
Prussia.....	9	2	3													
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COMMERCE BETWEEN RUSSIA AND BRAZIL.

According to the *Moscow Gazette* of April $\frac{3}{15}$, 1888, the Russian ambassador to Brazil, M. Ionin, has addressed a letter to the president of the Society for the Promotion of Russian Trade and Commerce, Count N. P. Ignatieff, calling his attention to the favorable opportunity offered at the present moment for establishing commercial relations between Russia and Brazil.

M. Ionin is of opinion that kerosene and other productions of naphtha are likely to find a safe and profitable market there, and suggests that the larger Russian producers of naphtha should send their representatives to Rio Janeiro and Buenos Ayres in order to study, on the spot, all particulars of the trade, and ascertain the conditions under which a regular export trade of naphtha could be established from the Black Sea ports to South America.

The *Novosti* reports that at a meeting held on the 31st of March last by the society above referred to the suggestions of M. Ionin were most favorably considered, and a resolution was passed that the attendance of persons interested in the naphtha trade be invited to attend, and the subject then thoroughly gone into. — Moscow, April 16, 1888.

N. W. HORNSTEDT,
Acting Consul.

AMERICAN SCHOOLS IN SYRIA.

I have recently visited Cairo, Jaffa, Jerusalem, Beirut, Mersine, and Smyrna and conferred with our consuls in these several districts, also with the governors and governors-general of the respective vilayets in the empire. I desire to acknowledge the universal courtesy I met with on the part of these officials and to express my satisfaction as to the very pleasant relations existing between them and our consuls.

While at Cairo His Highness the Khedive showed me every possible courtesy. I had so arranged my trip that I might be at Beirut at about the time the order for the reopening of the schools of the American Presbyterian Board of Missions in the vilayets of Syria and Beirut was to go into effect. I am gratified to report that fifteen of said schools had been reopened in anticipation of my arrival, and that orders were received from the Porte for the immediate reopening of five additional schools in the Syrian vilayet the day I left Beirut—namely, April 4. These are pretty much all, if not the entire number, that the missionaries care to reopen at this time. Such was my understanding of their wishes when they waited on me in a body while at Beirut to express their gratification upon the result. I desire in this connection to commend the zeal, tact, and energy shown by Mr. Bissinger, our

FORESTS OF NORWAY.

The French Consul at Christiania gives the following information on the forests of Norway:

The forests cover a territory of 19,752,393 maal, or 4,803,216 acres, divided as follows:

	Wooded.	Unproductive.	Total.
State.....	7,748,967	9,895,738	17,644,705
Districts and communes.....	1,762,348	345,840	2,107,688
Total.....	9,511,315	10,241,578	19,752,393

The average value of hectare (2.47 acres) of forest is 43 crowns (about \$11.60).

CORN LAWS OF PORTUGAL.

Portugal has imposed [an] additional duty on cereals and flour not shipped previous to the 4th instant, of from 25 to 30 per cent. — LISBON, *May 10, 1888.*

E. P. C. LEWIS.

COST OF MANUFACTURING PRINT CLOTHS.

I submit the results of an inquiry entered into to obtain the cost of manufacturing print cloth in Massachusetts, Lancashire and Switzerland. When I started on this inquiry into the comparative labor-cost and the general cost in certain specified industries in the different countries which are now competing in the neutral markets of the world, I was well aware that I should have to prepare myself against the objection raised with great force against such inquiries, to wit, that as a rule they do not cover the same article; that they deal with a variety of articles, although under one generic term; that even if the same articles by name is given, so many variations exist in width, in fineness and other characteristics that the latitude left for doubt would very materially affect otherwise valuable suggestions contained in the facts brought out. For every comparison therefore where the article went beyond a primary stage in the scale of production, and is known all over the world under a certain name or number, such as yarn, etc., I provided myself with samples from American manufacturers and made these samples the subject of inquiries in the countries where the same article is a subject of regular manufactures. I took print cloth samples from an American mill, with an analysis of cost of labor and materials and incidental expense to base my inquiries on. The goods are known as 64 x 64; *i. e.*, 64 threads to the inch warp and weft in American.

land the account is upon about the same basis. The width is 13 inches in America and England, and 70 centimeters in Switzerland, which is on a basis of 93 centimeters to the yard, being equal to $27\frac{3}{8}$ inches.

We have therefore here a fair basis on which to proceed. Obviously all the elements of composition are of the same nature, and price comparisons are easily found. Still, upon so simple an article, and with all the features of similarity, quite a number of disparities exist which make a comparison difficult and call for explanation.

First, the system of manufacture. In America the cloth mill is, so to speak, a complete unit; one management directs all the operations. In the print-cloth mill the cotton enters the mill and leaves it baled up as print cloth, and in most cases boxed up as printed calico. In England, as a rule, the spinning mill is a separate concern. The maker of the cloth buys the yarn from the spinner the same as the printer buys the cloth from the cloth maker. Even some weaving mills get their yarn sized (dressed) by outside dressers. The same subdivisions in manufacturing operations exist in Switzerland too. Recently, however, some mills have been erected in England (Lancashire) where all operations are united under one concern, much on the American plan. These, however, are the exceptions. The rule is as mentioned, and the separation of accounts is the result. Although the cost of labor can be taken per pound in spinning as well as in weaving in America and the other mentioned countries (but even here the basis varies with the number of yards to the pound), yet the other items of expense can not be set side by side, as they are separated in the one, and non-separated in the other instance.

Secondly. While the number of threads to the inch is the same, the yarn numbers are different,—similarity in the weaving but differences in the spinning. The numbers of yarn used in America are 28 for the warp and 36 to 38 for the weft. In England the yarn numbers are 32 warp and 40 to 42 weft; and in Switzerland the count runs about two numbers higher. In America the average would be about 33; in England 37 to 38, and in Switzerland, say 39 to 40. The spinning rates per pound in the medium numbers, upon which the report treats, are about the same in America and Lancashire (see my report of the cost of spinning cotton yarn in New England and in Lancashire, in No. 70 Consular Reports, October, 1886). The spinning prices for number 33 is 75 cents, for number 37 84 cents per pound, and for number 39, 93 cents. From the weekly earnings of spinners the wages of the back boys are deducted in the Fall River mills and in Lancashire. The use of coarser numbers gives American manufacturers a benefit of 0.09 cents, being equal to $\frac{9}{100}$ ths of a mill in the pound of the English manufacture and 0.18 cents, $1\frac{4}{5}$ of a mill, over

Third, waste. The loss of waste in spinning in a particular cotton-mill in Massachusetts, employing 110,000 spindles, and consuming 160,000 pounds of cotton a week, is 18 to 20 per cent. gross waste and 14 per cent. net waste,—that is to say, after deducting the salable value of the waste from the gross loss in spinning. This is one of our best print mills, which manufactures printed calicoes from the cotton upwards, and upon whose statements to me I have based these comparisons. Another mill in Lowell gave me the same percentage of net and gross waste in spinning. Both are economically conducted mills, the largest in the country, and in every sense run under the best working methods in America. The English spinning mill whose working account I made the basis of this comparison gives for the quarter ending February 25 last 1,466,923 pounds of cotton from which was produced 1,356,022 pounds of yarn, the loss being 110,901 pounds, or 8.185 per cent. on the yarn spun. This varies somewhat with the waste account of the same mill, which for another period was given me as 8.82 per cent. Besides, in the quarter's business the sum of £784 15s. 5d., or \$3,800, was realized from the sale of waste from spinning, or per pound of yarn 0.292 cents from 0.892 cents gross, net 0.600 cents, which reduces the net waste to about 5½ per cent. This is, however, the lowest wastage account that I have come across. The rate of waste, however, depends on the quality of the cotton used, and a manufacturing merchant of Manchester, who controls a variety of mills, and who has made a profound study of the cotton industry, gives me the loss in waste for strict middling N. O. as 10 per cent., middling N. O. as 13 per cent., and low middling, 15 per cent. One farthing per pound is said to be realized from the sale of waste. This seems, however, too liberal an estimate of the selling value of waste. But, naturally, the salable residue of waste to the pound of yarn spun increases with the greater gross waste. The above 0.292 cents is certainly correct, being a transcript of the actual working account of the mill. But still I am told by a spinner in Salford, whose mill contains the latest improvements and machinery, and with whom I compared notes, that, even with the finer cotton used by the mill whose work account I am describing, this is an exceptionally low percentage of net waste. It was readily admitted when I mentioned the name of the concern, however, that the mill worked every part of its business with exceptional advantage.

Though in American print cloths the cheaper kinds of cottons are used, yet there seems to remain still a greater percentage of net waste than in English mills, which probably will find explanation from our spinners, and which I can not venture to give.

In the inquiry recently instituted by the Manchester Chamber of Commerce into the relative advantages of the Bombay and Lancashire cotton spinner in competing for the trades in the far east, the waste in Surat cotton in spinning, both in

with low American cotton so as to bring up the cost of cotton to 10 cents as 15 per cent. in Lancashire. It is said that of late Surat cotton brought to the market is improving in quality and the wastage decreasing. In Switzerland 15 per cent. of the waste is also calculated in spinning, the same as in America. This, however, seems to be the gross waste and not the net waste, and needs further investigation.

I. THE COST OF SPINNING.

A. Lancashire Mill.

Output of quarter ending March 25, 1888, 1,356,022 pounds of No. 37½ yarn.

	£	s.	d.
Wages.....	4,759	6	3
Salaries.....	65	0	0
Power and taxes.....	1,143	7	5
Supplies.....	668	3	1
Repairs and depreciation.....	1,695	16	1
Interest on loan.....	£954	8	7
Bank commission and interest.....	110	18	0
	1,065	6	7
Carriage.....	523	19	0

PER POUND OF YARN.

	Pence.	Cents.
Wages.....	.842	1.684
Other wages and salaries.....	.612	.024
Total wages.....	.854	1.708
Power and taxes.....	.209	.418
Supplies.....	.120	.240
Repairs and depreciation.....	.300	.600
Interest on loan together with bank commission and interest.....	.180	.360
Carriage.....	.090	.180
	1.753	3.506

The account of the mill is as follows:

	Pence.	Cents.
Cost of raw cotton.....	5.456	10.912
Waste.....	.446	.892
	5.902	11.804
Wages.....	.854	1.708
Fixed charges.....	.526	1.052
Working expenses.....	.385	.770
Discount 2 per cent.....	.156	.312
	7.823	15.646
The selling price of yarn is.....	8	16
Leaving.....	.177	.354
Sale of waste.....	.146	.292
Total profit and loss.....	.323	.646

The selling price of yarn, of course, varies according to the demand and the conditions of trade. The margin here of .646 cents at the selling price of 8 cents is a profit on the turnover mentioned above of about \$9,000, or a net loss was

produce like good results and realize not only interest on the loan capital, but also a liberal dividend on the share capital. This mill has declared during the year a dividend of over 10 per cent., besides in the last quarter writing £449 16s. 10d., or \$2,188 to the credit of the reserve fund. This high rate of dividend is due to the fact that the greater part of the capital of the mill is loan capital and the smaller part only share capital. All spinning mills in England, except private ownership, of course, have organized on this plan of share and loan capital. The Oldham mills, as mentioned in the former report referred to above, are usually on half and half. This one, however, stands one to two, a rate of one share capital and two loan capital. The share capital is of 27,980 shares of £2 each = £55,960 all paid in. The loan capital is, permanently invested, £92,828 19s. 5d., with a floating loan of £11,334. This makes it possible, at the present low rate of interest at which money can be procured, to carry over a much larger share of the profits account to share capital than if the mill were organized principally upon shares. While the spinning wages are here given as 1.708 cents per pound, the same number of yarn, as I am told, can not be spun by older mills for less than 2 cents per pound labor-cost. The managing expenses are extremely light; the directors are all business men and devote their time, free of charge, to the interests of the mill. They take a great pride in the mill, and its prosperous management is shown in the above figures as the result. A margin varying according to the grading of the spinning mills up to a cent per pound in these numbers in the cost of manufacture from cotton to the shipping of the yarn (the difference would, of course, have to come from interest and dividend) is, therefore, not to be excluded from the general estimate of cost.

The cost of manufacturing a pound of print cloth in America, as taken from the working account of one of the largest mills in Lowell, is as follows:

B. Cost of spinning in America.

	Cents.
Carding.....	.855
Spinning.....	1.137
Weaving.....	3.028
Dressing.....	.469
Other labor, finishing, etc.....	.2
Extra board.....	.039
Labor.....	5.728
Cloth, etc., in finishing department.....	.171
Water power and taxes.....	.568
Supplies.....	.899
Repairs.....	.901
Expenses.....	.284
	2.823
Total cost.....	8.551

While the items for labor are separated here in spinning, weaving, and finishing and can be easily compared with the cost in England all items of expense

We can approximate the expense by taking the English additional cost for weaving print cloth as a guide. This, I was told by an expert in the business, is covered by $\frac{5}{8}$ to $\frac{3}{4}$ of a penny on a pound of print cloth, or about $1\frac{2}{3}$ cents.

To satisfy myself, however, of the correctness of these statistics on weaving, I went to Burnley, a town in N. E. Lancashire, where most of this class of print cloth is manufactured, to obtain the exact figures. The actual outlay for labor in a pound of print cloth outside of the weaver's wage, taken from the mill account, is $0.7925d.$, or 1.585 cents. The total net cost of a piece of print cloth of 125 yards, weighing 14 pounds, labor and expense, supplies, interest, charges, etc., but exclusive of net profit and spinner's wage, is about $1s. 9d.$ or $1.50d. = 3.00$ cents per pound; deducting from this $0.7925d. = 1.585$ cents, we have $0.7075 = 1.415$ cents. Others state this item as $2s.$ per piece with about the same labor cost, which would then make the pound cost $1.71d.$ or 3.42 cents; deducting from this $0.7925d.$ or 1.585 cents, leaves $0.9175d.$ or 1.835 cents.

As this English expense, however, includes interest charge, which is not included in the item of American cost, we may take this $1\frac{3}{8}$ cents to somewhat more than cover the items in weaving covered in the American account mentioned above. On closer scrutiny it may still be found necessary to take a larger part of "supplies" at least over to the weaving department. Sizing takes a very much greater share than all other supplies given in the weaving department in America. It is therefore safe to take the general average as $1\frac{3}{8}$ against 2.823, the American total, except in supplies, where the cost in the spinning supplies is certainly not greater per pound than in England. Deducting this $1\frac{3}{8}$ cents from 2.823 leaves 1.448 or $1\frac{1}{2}$ cents as the additional charge to be allotted to the spinning expenses. We have, therefore, labor in a pound of yarn for—

Print cloth in America	1.992
Other expense.....	1.448
Total	3.440
Less supplies chargeable to weaving as being in excess according to above statement...	.255
	3.205

Comparing this with the English expense as classified above we arrive at the following:

	PER POUND OF YARN.	
	Lancashire.	Lowell.
Total wages.....	1.708	1.995
Power and taxes.....	.418	.298
Supplies	.240	.240
Repairs and depreciation.....	.6	.475
Interest on loan, etc.....	.3	.6
	.18	

I have to repeat that though we have nearly "covered" the same items, still the modifications in each item are sufficient that the result may be somewhat altered when comparison can be made item for item in each branch. For this inquiry, it will be only possible to cover absolutely both costs in America and England by taking the totals in the summing up of this report. For instance, while wages are somewhat higher in America in number 32 to 33 than in Lancashire in number 37½, it is not due to direct spinners' wages, which are about the same, but to a higher general cost as held against this most profitable working mill, and would not at all, it seems, be above, and even somewhat below, the cost of English mills not so advantageously situated or organized. Interest of loans is not taken in the American mill account, as the mill is organized on stock capital, nor is expense for carriage included. Taking these items from the English cost to bring it up to American cost, we might perhaps say that less than one-half cent per pound would cover the difference in favor of this special Lancashire spinning-mill on yarn turned out and bring it 0.3 cents below the cost of such mills, which have for a number of years not been able to show any dividends or even interest on loans in Lancashire.

IN SWITZERLAND.

In Switzerland the cost of spinning cotton into yarn was given to me as 70 centimes per kilo, or $6\frac{2}{3}$ cents per pound. This, however, is the complete cost, and includes all labor, supplies, and expense, depreciation, charge, etc., interest and profit for thirty-eight to forty years. In other words it is the price which the maker of the cloth pays for his yarn in excess of the price of cotton. The margin of difference seems to be a high one, and, giving due allowance for the difference in numbers, still leaves a margin of about 2 cents to be accounted for. This includes the profit of the spinner, which is not contained in the account given for America, and which even in England, as stated before, leaves a margin from a half a cent to a cent. On the other hand the Swiss mills are usually small ones, working with machinery and general organization not at all up to the most recent developments and inventions.

A manufacturer in Switzerland, with whom I exchanged opinions on cotton manufacturing in the different countries and to whom I mentioned the prices at which spinning and weaving mills are capitalized in England, told me that they would cost far more in Switzerland to erect. To my statement that "a good fire-proof mill can be built and filled with mules at £1 or \$4.86 to £1 2s or \$5.34 per spindle, and a good shed can be built and filled with calico looms at £12 or \$58.32 per loom," as I had it from competent authority, he states that it would cost there 60 francs or \$12 per spindle and 1,000 francs or \$200 per loom. However, in the nature of an apology for this high cost, he explained that they could not make use of the English built machinery, spindles and looms, as they were too poor and did not last, and that theirs, made in Mulhouse especially, lasted twice as long as the English ones.

facturing. When invention chases invention, and the advances made in one decade show improvements and changes which fifty years ago were not seen in a long lifetime, it seems that the long life and utilization of machinery is but another term for procrastinations and conservation of antiquated methods. How effectively these changes are introduced was shown to me by my informant at Salford. The mill which I visited there was a comparatively new mill, so to speak, with every conceivable labor-saving appliance, walking-cranes for loading and unloading, railways through the mill for the carding of goods, and all of modern appearance. Still he told me that in their other spinning-mill of latest construction the earnings of the operatives were from 1 to 2 shillings higher per week than in the older one, as the newer machinery enabled them to turn out more work at a smaller cost to the owners.

On the whole it will be seen, even making allowance for the fact that some mills in Switzerland may work under more disadvantageous circumstances, that, view as we may, in these counts at least they have no great advantage in their cheaper labor, but, on the contrary, work at a higher cost. Under all conditions, taking the most profitably worked mill in England as a basis for comparison with our mills in America, it will be seen that in the cost of spinning medium numbers our cost is almost on a par, and that we pay no more for our labor than is paid in cotton spinning in England and considerably less than is paid on the Continent, if we take the wages by the pound or product and not by the day wages earned by the spinner in the different countries. In fact the latter is an illusory measure of cost, and the former the only true one.

In spinning wages stand as follows, measured by the day:

	Switzerland.	England.	America.
Men, mule spinners.....	\$0.57 to \$0.66	\$1.23 to \$1.68	\$1.50
Mule spinner's helper.....		0.64 to 0.72	
Mule spinner's boy.....			0.60
Women, ring spinners	0.47 to 0.57	0.56	0.84
Women, carding	0.38		
Girls.....	0.48		
Women, drawing and slubbing	0.38		
Women and girls.....		0.64 to 68	

In throstle spinning in England one girl attends four sides of 144 spindles, or 576 spindles; in America, as many as eight sides. The average, as given to me, in the print-mill of Lowell is 960 spindles per spinner (girls and women). In other words, 50 per cent. of higher earnings are balanced by $66\frac{2}{3}$ per cent. more work turned out or spindles attended to. The speed in England is about 5,300 in throstle spinning and about 8,000 in mule spin-
Switzerland and America is about the same,

subject at the time of my visit, having been engrossed then with other duties of inquiry. As I wanted to obtain the cost of a completed pound of print cloth of the number named above, I did not purpose to go and examine into details of the cost of yarn spinning, but only to get the cost of the material which the weaving mills employ in making print cloth. They buy the yarn and pay at the rate of 2 francs 20 centimes per kilogram. This is at the basis of 1 franc 30 centimes of cotton delivered at the spinning-mill in Switzerland and 15 per cent. waste, equal to 20 centimes, leaving 70 centimes per kilogram the cost to the weaver for turning cotton into the yarn used by him.

II. WEAVING.

Weaving is paid per cut at the rate of 20 cents for 50 yards in Lowell. The rate at which weaving is paid for this particular print cloth in Lancashire, at the present time, is $12\frac{3}{4}d.$ or $25\frac{1}{2}$ cents per cut of 50 yards, being 25 per cent. higher than the rate paid in Lowell; or, to put it in another form, 40 cents in Lowell and 51 cents in Lancashire per 100 yards. The direct cost for weaving of the same length—7 yards to the pound—in America is therefore 2.80, and in Lancashire, 3.57. The labor-cost in a mill at Lowell, per pound, is given as follows:

	Cents.
Direct weaver's wages.....	2. 80
Other labor expense.....	. 428
Dressing.....	. 469
Extra board.....	. 039
	3. 736

Here, now, when making comparison with English cost, one of the modifications enters which I referred to above and makes the seemingly easy case rather complicated again. The numbers of yarn being finer in England than in America, give necessarily a larger number of yards to the pound of equally wide woven goods, when the count of threads to the inch is the same. The American goods are 7 yards to the pound, and the English goods, which I weighed for my own assurance in the mill, of the same width as American, measure 9 yards to the pound. We have therefore to reduce the pound to the American basis for comparing the cost of an equal number of yards. The items are, per pound, in Burnley:

	LABOR COST.		Less $\frac{2}{3}$ ths to bring to 7 yards American.
	Pence.	Cents.	Cents.
Sizing.....	. 308	or . 616	. 479
Beaming.....	. 092	" . 184	. 143
Twisting.....	. 08	" . 16	. 124
Cobwinding.....			

Compared with England, for the same length, we have in labor-cost :

	Lowell. Cents.	Burnley. Cents.
Weavers' wages.....	2.8	3.57
Dressing or sizing	.469	.479
Beaming, twisting, winding, etc.....	.428	.753
Extra board.....	.039	.....
	3.736	4.802

The sizing or dressing costs about the same as in America. The extra board paid in American mills, as stated in the American account, is paid by the mill to the boarding-house keepers for all female employes boarding in the mills boarding-houses, and, of course, is not an expense in the cost of manufacture in Lancashire. It must, however, be taken as an additional cost of manufacture in America, and in a comparison of the cost is to be counted. We have, therefore, a total labor-cost in weaving 1 pound of print cloth in England as 4.802 and in America as 3.736, or 1.066 cents higher labor-cost in England than in America for an equal amount of work turned out in number of yards.

The general expense for supplies, repairs, power, and other expense is taken as $1\frac{3}{8}$ cents in England, and in America, as said before, where the items can not be well separated, an approximate estimate of the cost left over from the amount allotted to spinning expense makes the general expense for supplies, etc., 1.335 cents in weaving. It appears, therefore, that in the general expense of manufacture in the weaving department the difference is not very great between America and England, and that the only difference existing consists in the lower rate of wages paid to American operatives compared with England. The English total cost and the American total cost of the weaving department is therefore as follows :

	English.	American.
Labor	4.802	3.736
Supplies and expense.....	1.38	1.335
	6.182	5.071

The Swiss cost of weaving from the yarn to the cloth, inclusive of all expense for materials, general expense and interest, is 80 centimes per kilogram, which is equal to 6.96 cents per pound. To sum up, then, the American and English cost of manufacture stands :

	American.	England.
Total labor-cost of spinning.....	1.992	1.708
Total labor-cost of weaving.....	3.736	4.802
Total cost of supplies and other mill charges, approximately *	2.823	3.175
	8.551	9.685

of weaving has to be taken as a whole; but, adding these two items, the total spinning cost of 6.06 cents and the weaving cost of 6.95 cents, 13.01 cents, constitutes the whole cost, inclusive of interest, general expense, etc., of manufacturing print cloths in Switzerland of the quality and width described.

We have, therefore, 8.551, 9.685, and 10.12 (reducing the cost of Switzerland to the length standard of America) as the total cost of manufacturing in America, England, and Switzerland.

The selling price of the Swiss cloth at the time of my inquiry, about a year ago, was 3 francs per kilogram, equal to 26 cents per pound. The price of cotton, inclusive of waste, was just 13 cents. The price of the English cloth, taken per pound, is 23.35 cents.

The relative working capacity of and wages paid to weavers in America are, according to information from one of the leading mills, an average of six and three-quarters looms to the weaver. I have recently been informed that in England four looms is the highest rate of single weavers making this class of cloth. Some run six looms, but they invariably have a helper to assist them, who is paid by the weaver out of his wages. These are men; the four-loom weavers are mostly women. For single weavers no more than four looms are taken. The general average, taking all weavers, poor and good, is given by competent judges to be not more than three and a half looms. The average earnings per loom are given as 5s. 3d., or say \$1.25 per loom, or averaging earnings for finished weavers of \$5 per week. A guinea per week, as I was told at Burnley, is a fair average for good single weavers. At the rate at which weaving is paid this would indicate for four looms a weekly output of 980 yards; but if we take the three and a half loom average, or only 857 yards.

I have statements from two mills, both in Lowell, one giving the earnings per loom at 81 cents. This would indicate a weekly earning of \$5.08, and at the rate of 40 cents per 100 yards be an output of 1,270 yards per week. At another mill, running a fairly equal percentage of looms per weaver, it was stated at the time of my visit that $4\frac{1}{2}$ cuts of 50 yards was the output of one loom per week, which, taking an average of six looms only, would be a little over 27 cuts of 50 yards, or 1,350 yards, and at the rate of 40 cents per 100 yards would be \$5.40 as the weekly earnings.

It will therefore be seen that the earnings of English weavers at the present time in these cotton mills are nearly the same as the American. The labor-cost, however, by the piece, cut, or yard is considerably above. The American earnings can only be brought up to the English earnings by a considerably greater output by the American operatives. The piece rates for weaving are not absolutely uniform, and some differences exist. Only a few days ago a convention of cotton weavers was held at Blackburn for the purpose of taking action towards obtaining a uniform rate of wages in cotton weaving in Lancashire. The rates quoted above are given by a manufacturer of machinery and looms in Burnley—the chief seat of manufacture

mate knowledge of this special trade is capable of giving the most accurate information on the subject. From managers of Burnley mills I obtained further and more detailed statements, enabling me to corroborate previously received information and bring the whole to as nearly a reliable basis as can be received. The figures are taken from actual mill accounts, and leave neither for America or England room for doubt as to their general correctness.

THE SELLING PRICE.

The agent of an American print-works mill, with whom I exchanged views on the subject at the time of my late visit, told me that he knew that he did the spinning cheaper than they did it in England, but he had not known that the weaving was done at a lower price in America than in England; that if this were so they would be able to export print cloth to England, which they were, however, not able to do. They had tried it in times of depression, when prices were low, but could not sell the goods even under a loss.

The matter seems, however, to be of easy explanation. The selling price at the present time of a piece of 28-inch print cloth at the Burnley mill is 13s. 7½d., or \$3.27. The manufacturing cost from the yarn up, in labor, supplies, expense, etc., is 4s. 4½d., or \$1.05, and of 14 pounds of yarn at 8d. per pound, 9s. 4d., or \$2.24, and a total cost of \$3.29. This shows an apparent loss of 2 cents per piece. But, as the mill manager told me, there is a small profit made over and above the interest and dividends on the shares, which can only come from the smaller yarn weight, than that indicated by the cloth weight, and due to the sizing given to the yarn before weaving it, or from cheaper yarn prices, which frequently occur, according to the ruling price of cotton.

The price per yard is therefore 2.616 cents in England, while print cloth of this width and count sells now at about 3⅜ or 3½ cents in America, and I do not recollect that it ever sold at less than 3 cents. Now, this difference is not due to the labor cost, which is cheaper than in England. No labor in this particular cotton-weaving industry is so poorly paid as the American, if taken by the piece; it is not due to other higher expense, which is pretty nearly the same as in England, although the higher cost of plant and interest charges may bring incidentals a shade higher; it is only to a small extent due to higher profit rates, or rather dividends, which at this present time are very satisfactory indeed. In October, 1886, when cotton figured at 10.695 cents, inclusive of waste (it is somewhat higher now), the total cost, exclusive of dividends, per pound, was 19.246 cents, or 2.766 cents per yard.

The English cloth, however, with cotton at 11.804 (inclusive of waste), or about 10 per cent. higher, is sold at 2.616, inclusive of interest, dividends,

is 159 cents less than the American net cost.

finer, consequently a greater length of yarn to the pound, which, if of the same number of picks per inch, must give a greater number of yards to the pound than in America where an average of at least 5 numbers coarser is used.* True, this makes the American goods stouter—more cottony—while the English prints have a finer yarn but contain more dressing. Whatever may be said in favor or against one or the other merit or demerit, the result is certainly a considerable cheapening in the price of cloth.

Accepting the yarn weight to correspond with the cloth weight, for briefness' sake, then 125 yards of cloth in Great Britain will take 14 pounds of yarn, and in America 18 pounds of yarn—a clear gain of 4 pounds to the English manufacturer; a fact which, without any further elaboration, will fully explain why the finer yarn goods of England are cheaper, despite the higher labor cost, than the American goods. It is a saving in the cotton alone of 4 pounds in 125 yards, or, at $11\frac{1}{2}$ cents, 46 cents, and in the yarn of 64 cents. Taking the saving of cotton alone at the rate of 7 yards to the pound, there is a difference of $\frac{3}{4}$ cents on the basis of calculation of American print cloth, equal to 38 per cent. of the total manufacturing cost, inclusive of labor, and equal to 56 per cent. of the total labor-cost in spinning and weaving.

To be exact, therefore, adding two-sevenths to the weight of cotton in each yard of English print cloth, to bring it up to the American weight, would give to the present price of 2.616 cents additional cost of cotton, at two-sevenths per pound of cloth, at $11\frac{1}{2}$ cents, 3.285 cents per yard, at 7 yards to the pound, .470 cents, bringing the cloth up to 3.086 cents per yard, or 21.602 cents per pound. The American cost is 19.246 cents, or $2\frac{1}{3}$ cents cheaper per pound, when put side by side, on the intrinsic merits of weight. Allowing for the difference in the price of cotton and interest charge, contained in the English cost, we have a balance left in favor of America sufficient to cover the higher labor cost of England in making print cloth. —TUNSTALL, *May 8, 1888.*

J. SCHOENHOF,
Consul.

STRIKES IN HOLLAND.

In a portion of my annual report for 1887, submitted under date of January 9, 1888, relating to the general condition of this country, I alluded to the state of its manufacturing industries, and amongst my remarks upon this point are the following:

In the rates of wages for all classes of labor the change has not been material. They have remained about what they were the year before, which means that in many cases, if not as a rule, they have been and are too low for further reduction.

No strikes have occurred in any quarter or in any industry—

I deem it to be sufficiently interesting now to report that but very few days elapsed after writing the above when a strike broke out in two of the

*The clothmakers usually take two to three numbers finer yarn than the

Strikes, of which but few particulars have so far been published, are now also reported from the turf-pits districts situated in the provinces of Drenthe and Overijssel.

In these cases, as I understand, the workmen turf-cutters, some hundreds of them, stopped work upon being refused payment of a certain increase of former wages.

I noticed several accounts in the newspapers of disorderly conduct on the part of the strikers in that section, and of the necessity for the requisition of some military force to put down or prevent further disturbances.

In some cases the land or pit owners have agreed, as is reported, to meet the demand of the laborers, many of whom resumed work. — AMSTERDAM, *April 24, 1888.*

D. ECKSTEIN,
Consul.

A KIANGSU GUILD AT TIEN-TSIN.

In my despatch on Chinese guilds, published in CONSULAR REPORT No. 83 (September, 1887), the compiler has interpolated a mark of interrogation, as follows: "In most cities (?) each province has its own guild." The implication is that the text was not understood. To thoroughly explain the statement I enclose herewith a programme for the establishment of a Kiangsu guild at Tien-Tsin.

Kiangsu, it will be noted, is one of the southern provinces, while Tien-Tsin is a northern city; yet a guild for Kiangsu people is to be established at Tien-Tsin. I repeat that guilds for the accommodation of the people of each province are established in the principal cities. — PEKING, *March 20, 1888.*

CHARLES DEBY.

PROPOSED ESTABLISHMENT OF A KIANGSU GUILD IN TIEN-TSIN.

Since the inauguration of commerce between China and western countries, Tien-Tsin has become the trade center of northern China, which gives it an importance beyond that of any other city in the northern provinces. Indeed its importance as an emporium of trade and foreign intercourse is so great that His Excellency the Viceroy of Chihli finds it necessary to locate his headquarters here. Among the official and mercantile classes who are congregated at this flourishing port, men from the province of Kiangsu greatly predominate over those of any other province. Of the millions of piculs of rice which are sent up to Tien-Tsin every year, over one-half come from the provinces of Kiangsu and Chekiang alone. The shipment of this enormous quantity of rice consequently brings a host of Kiangsu vessels here, together with their crews.

Aside from the Kiangsu officials and merchants who are regularly stationed here, a considerable number of others are constantly either going to or from Peking, and while en route they stop here for a longer or shorter period.

Under these circumstances it is desirable and necessary that a Kiangsu guild be established where fellow provincials who may have

may find suitable and convenient quarters for lodgment; and, secondly, such a guild, by affording a place where Kiangsu provincials may assemble to deliberate over matters of business or of public importance, will serve to bind together and unify their interests.

A third use of the guild would be that on all occasions of importance, public receptions, and entertainments can be given when natives of Kiangsu may meet together for social convivialities. Moved by considerations such as the above, the prominent members of the Kiangsu community in Tientsin have decided that a guild is indispensable, and they have accordingly taken the needful steps looking toward the accomplishment of the project. A committee has been appointed, composed of the Kiangsu officials in the province of Chihli, and they have drawn up a set of regulations for the purpose of raising the required funds to carry out the proposed undertaking.

In the meantime, pending the collection of the funds required, it has been decided to borrow the money and proceed with the building at once, the loan to be repaid from time to time as subscriptions are received. The following are the regulations enacted, assessing prescribed contributions upon Kiangsu merchants and officials:

1.—For all civil officials of the rank of Taotai and above, and for all military officers above the rank of colonel, whether expectant or actually in office, subscriptions shall be levied in accordance with their means.

2.—Officials of the rank of prefect, sub-prefect, deputy sub-prefect, magistrate, and all others of that class, shall each be required to contribute a sum of 100 taels annually, beginning with this year, and continuing for five years.

3.—Officials below the rank of prefect and magistrate, although expectant, yet if they have salaried employment, shall contribute an amount equal to their one month's salary, this to continue for five years.

4. Secretaries, clerks, and all of that class employed in yamêns who derive considerable perquisites shall contribute annually 2 per cent. of their income, collectible for five years.

5. Beginning with this year and continuing until the debt contracted in the building of the guild is cancelled, officials who are natives of Kiangsu, and who may have occasion to pass through Tientsin en route to or from Peking shall be required to contribute toward the general fund, each according to his ability. And when the guild is finished, it will be ready to accommodate those who have helped towards its establishment.

6. Subscription books will be sent to the Kiangsu officials of other provinces in order that they may contribute toward the guild fund, thus to hasten the final completion of the project.

7. The establishment of the guild being for the benefit of the Kiangsu merchants as well as the officials, the former should contribute each according to his means, their contributions being collectible twice yearly until the end of five years.

8. Steamers conveying rice from Kiangsu, for every 10 piculs of rice transported shall pay an assessed contribution of 2 candareens, until the expiry of three years; and rice junks shall pay 6 candareens for every 10 piculs of rice transported, this contribution being assessable for five years.

The above regulations are enacted with reference only to the establishment of the guild. When it is completed, further rules will be devised for its permanent organization and management, and these rules will be printed and circulated among those interested. All subscriptions are to be sent in to the head telegraph office in Tientsin, and will be received by the firm of Yü T'ung Hêng.

SAN DOMINGO ENTERPRISES.

The Government has signed a contract with French bankers for a loan of 21,000,000 francs at 6 per cent. per annum, receiving for the same 15,000,000 francs, as follows: Five million with which to pay the Hartmont repudiated loan, 5,000,000 in munitions and vessels of war, and 5,000,000 toward cancelling the present indebtedness of the Government. I have to report two important American enterprises already contracted for. The one to build a bridge across the Ozama river by Mr. Nathaniel McKay, he receiving the usufruct of the bridge for thirty years, paying to the city council an average of $12\frac{1}{2}$ per cent. of the net proceeds, after which date the bridge to become the property of the city council. I think this a very important and lucrative concession for Mr. McKay. Another enterprise of importance is a concession granted to certain Hartford capitalists through Mr. H. M. Linnell, of Hartford, Conn., and Mr. William St. John, of New York, for lighting the city with the system of electric lighting. — SAN DOMINGO, *April 8, 1888.*

H. C. C. ASTWOOD,
Consul.

DUTCH STEAMSHIP LINE TO CARACAO.

A new line of steamships, the Royal Dutch and West India Steamships, receiving subsidies, will now compete for the trade our ships have built up, and having no dockage to pay, it puts the American steamships in a very unfavorable position. — CURAÇAO, *April 27, 1888.*

L. B. SMITH.
Consul.

THE BEET-SUGAR INDUSTRY IN GERMANY.

Many things which were formerly counted articles of luxury have now entered into general and daily use, and are reckoned as indispensable to life and comfort. This is due to the great change which has come over our habits and customs. As the relations between the different countries and people of the world have become more intimate, and their means of communication speedier, competition in international trade and commerce has grown sharper and more active. A wider theoretical knowledge and a profounder technical skill have come to the assistance of labor. The products of labor have been thereby cheapened, the cost of living consequently reduced, while hand in hand with the increased consumption there has been an unprecedented increase of production. This is particularly the case with sugar.

At the beginning of the last century the supply of sugar in Europe scarcely equaled half a million meter centner.* In 1730 the import of this article to Europe was estimated at a little over a million meter centner. To-day the annual consumption of raw sugar in England alone amounts approximately to eleven million meter centners. According to authentic sources, moreover, in the year 1867, the total annual production of colonial sugar (cane sugar) amounted to 14 million meter centners, while at present it reaches far above thirty million. Of beet sugar, the annual production

which was at that time only three and one-half million meter centners, twenty-five million meter centners are now annually consumed. In the saccharine constituents of the native German sugar beet, cane sugar, formerly exclusively used, has found a mighty competitor.

It is from the sugar cane, *saccharum officinarum*, that the major portion of the world's supply of sugar is obtained. The American continent, with its adjacent islands, constitutes undoubtedly the most productive source, while the Island of Cuba is the largest sugar-growing country in the world, having produced in 1849 about 220,000 meter tons; in 1859, 415,000 meter tons; in 1870, 660,000 meter tons; in 1881, 521,000 meter tons, and in 1882, 606,000 meter tons. On the South American continent Brazil ranks first as a sugar-producing country, and, after Cuba, furnishes the largest supply of sugar cane. In the harvest of 1860-'61 Brazil exported rather more than 650,000 meter centners, and in 1876-'77 as much as 1,800,000 meter centners. Since 1879, notwithstanding various circumstances, which tended to paralyze the trade, the export of sugar from Brazil has averaged more than 2,000,000 meter centners. In the extraordinary good harvest year of 1880-'81 it rose to over two and one-half million meter centners, and in 1881-'82, in which year the sugar-cane harvest was generally unfavorable, equaled, quite unexpectedly, 2,200,000 meter centners.

The following comparative estimate shows the present average production of colonial sugar in all sugar-growing countries. Owing to unavoidable circumstances the figures are in some instances only approximate:

	Meter centners.
Cuba (production).....	6,000,000
Brazil (export)	2,500,000
British West Indies (export).....	1,800,000
United States of America (production).....	1,500,000
French West Indies (production).....	950,000
British Guiana (export).....	850,000
Peru (production).....	630,000
Venezuela (production)	420,000
Argentine Republic (production).....	230,000
Dutch Guiana (export)	140,000
San Domingo (production)	63,000
Mexico (export)	40,000
San Salvador (export).....	25,000
British Honduras (export).....	25,000
Nicaragua (export).....	5,000
French Guiana (production)	2,000
Total in America.....	15,180,000
Java (production)	2,500,000
China (production)	2,500,000

Hawaii (export)	300,000
Queensland (production).....	210,000
New South Wales (production).....	90,000
Fiji Islands (production).....	10,000
Total in Australia and Polynesia.....	610,000
Mauritius (production).....	1,350,000
Réunion (production).....	320,000
Egypt (production).....	430,000
Natal (export).....	120,000
Mayotte (production).....	40,000
Nossi Bé (production).....	20,000
Total in Africa.....	2,280,000
Spain	380,000
Total in Europe.....	380,000

The total production of colonial sugar in the world amounts, therefore, to 25,689,000 meter centners. To this amount, however, must be added, first, the cane sugar produced in countries other than those above mentioned, and secondly, the home consumption of cane sugar in places from which the export has alone been stated. The total amount of sugar produced from sugar cane may then be reckoned at considerably more than twenty-five million meter centners; in fact, a total of twenty-six to twenty-seven millions could not be regarded as an exaggerated estimate.

Great, however, as the importance and growth of the cane-sugar industry as shown by the above figures most undoubtedly are, the vastness of the increase in the consumption of sugar by all nations during the past twenty years is first seen when a comparison is made between the development of beet sugar and that of colonial sugar as articles of commerce.

Professor Achard, a pupil of the highly meritorious discoverer of the new method of beet-sugar manufacture, Professor Markgraf, of the Berlin University, whose death occurred in 1782, started on his farm "Cunern," in Lower Silesia, at the turn of the past and present century, with the aid of and under the protection of Frederic William III., the then reigning king of Prussia, the first beet-sugar factory in Europe. This new industry, however, owing to various causes, did not begin to flourish until much later. France, in fact, which had in 1837 no less than 585 beet-sugar factories, producing 50,000 meter centners of beet sugar annually, was the first country in which the industry in question can be said to have struck firm root. Germany followed slowly in the wake of her neighbor. In 1837 she had only 122 beet-sugar factories in operation with an annual production of only 14,400 meter centners of sugar from 254,000 meter centners of beets.

New, and almost exclusively European, the beet-sugar industry supplied the world's market in 1882-'3 with 21,455,340 meter centners of sugar; in 1883-'4 with 22,400,000 meter centners, and in 1886-'7 with approximately 22,672,000 meter centners, or scarcely 14 per cent more than in 1837.

At the present date the beet-sugar production amounts in meter tons, at 1,000 kilograms, to—

Countries.	1876-'77.	1881-'82.	1882-'83.	1883-'84.	1884-'85.	1885-'86.	1886-'87.
	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>
In Germany	289,422	599,722	848,124	925,000	1,123,030	808,100	985,600
In Austria-Hungary.....	341,553	411,015	472,002	435,000	450,000	475,000	460,600
In France	243,182	393,269	423,194	450,000	475,000	460,000	465,000
In Russia and Poland.....	250,000	308,779	284,491	300,000	320,000	315,000	320,000
In Belgium	45,628	73,136	82,723	90,000	92,000	90,000	93,000
In Netherlands ..	16,078	20,000	25,000	30,000	35,000	32,000	35,000
In other countries.....	10,000	10,000	10,000	10,000	10,000	10,000	10,000
Total production.....	1,195,563	1,815,921	2,145,534	2,240,000	2,505,030	2,190,100	2,369,200

These figures, however, only show the extensive development of the beet-sugar industry, and not the more important development, which must certainly be considered as the true cause of the enormous increase in the consumption of beet-sugar.

This intensive development is shown in the following table, extracted from the official statistics of the German Empire on beet-sugar manufacture:

Statistics of the average production of sugar and molasses during the years 1836 to 1887.

During the year.	Number of factories.	Annual average amount of beets consumed.		Production of raw sugar (juice reduced to raw sugar) in 000 m. c.	Production of molasses in 000 m. c.	Production of raw sugar, per factory, in 000 m. c.	Beets consumed, per m. c. raw sugar, in meter centner.	Average production of—	
		In all factories generally, in 000 m. c.	Per-factory in 000 m. c.					Raw sugar per cent.	Molasses per cent.
1836-'37	122	353.5	2.1	14.1	10.9	115.5	18.00	5.50	4.30
1840-'45	116	2,067.7	17.8	129.9	70.4	1,119.5	15.91	6.30	3.38
1845-'55	221	9,238.9	41.8	701.8	233.7	3,125.5	13.66	7.57	2.54
1860-'65	253	17,931.8	70.9	1,424.4	402.0	5,129.5	12.50	8.00	2.23
1870-'75	322	29,530.6	91.7	2,512.4	840.8	7,802.5	11.75	8.53	2.96
1875-'76	332	41,612.8	125.3	3,580.5	1,389.5	10,314.5	11.62	8.60	3.22
1875-'76	332	41,612.8	125.3	3,580.5	1,389.5	10,314.5	11.62	9.21	2.80
1878-'79	324	46,287.4	141.8	4,261.5	1,336.5	13,152.5	10.86	8.80	2.69
1880-'81	333	63,222.0	184.3	5,559.1	1,649.8	16,694.0	11.37	9.56	2.40
1881-'82	343	62,719.5	182.9	5,997.2	1,508.1	17,484.6	10.46	9.51	2.24
1882-'83	358	87,471.5	244.3	8,319.9	1,963.1	23,326.2	10.47	9.51	2.24
1883-'84	376	89,181.3	237.2	9,401.0	2,079.7	25,002.9	10.54	10.54	2.33
1884-'85	408	104,026.8	254.9	11,230.3	2,596.9	27,532.6	10.79	10.79	2.50
1885-'86	379	70,703.1	177.2	8,081.4	1,801.7	19,587.6	11.03	11.43	2.55
1886-'87	401	83,066.7	207.1	9,856.2	2,158.8	24,579.2	11.86	11.87	2.60

According to these figures the quantity of beets requisite to produce one of raw sugar has declined in the German Customs Union since

of saccharine matter from the beets is attributed only in a small degree to the larger average intrinsic quantity of sugar gradually produced by rational culture in the beets consumed. It is far more the result of the scientific and technical improvements which have been introduced in the internal economy of the sugar factories.

The enterprise which the Germans have shown in their application of science and new technical processes in the manufacture of beet sugar is shown by the following facts and statistics:

In the German Empire were operated in the years—

1871-'72, in a total of 311 factories, 52 with diffusion, 259 with presses.

1875-'76, in a total of 332 factories, 157 with diffusion, 175 with presses.

1882-'83, in a total of 358 factories, 343 with diffusion, 15 with presses.

1886-'87, in a total of 401 factories, 397 with diffusion, 4 with presses.

In 1886-'87 401 sugar factories were in operation in Germany, while a large additional number were either planned or in course of construction. No less than 147,782 hectares of land were appropriated to the cultivation of beets (1 hectare equals 2.471 acres), the average crop being 300 meter centners to the hectare. The production of raw sugar amounted to 9,856,278 meter centners, that of molasses to 2,158,872 meter centners, or 12,015,150 meter centners of salable produce.

Germany exported in 1886-'87, raw sugar, 5,136,039 meter centners, valued at 188,234,829 marks; refined sugar, 1,303,789 meter centners, valued at 101,043,649 marks; sirup and molasses, 243,508 meter centners, valued at 2,725,138 marks; total beet-sugar produce export, 6,685,336 meter centners, valued at 292,003,616 marks. The value of the export in 1882 was 156,770,000 marks, and in 1881 151,898,000 marks, so that from 1881 to 1882 an increase of 4,897,000 marks took place, and from 1881 to 1887 an increase of 140,105,616 marks. The principal portion of the beet sugar manufactured in Germany is exported to England. At the same time it is probable that a portion of the English import stated as of German origin may have come from Germany only in transit. Nevertheless the German sugar industry most undoubtedly dominates the English market. In fact Germany, with her present annual production of 9,856,200 meter centners of raw sugar, is without doubt the chief sugar-producing country in the world.

During the past few years great efforts have been made to develop the beet-sugar industry in the United States. The experiments, however, which have been made at a vast sacrifice of energy and capital, have entirely failed. This deplorable experience, so dearly purchased, is partly due to the insufficient supply of beets, inferior apparatus, and mismanagement.

The following tables, A, B, C, and D, compiled from the official statistics of the German Empire for the beet-sugar industry, give a clear and very comprehensive idea of its vast extent and profitability. —BARMEN, *April 27, 1888.*

TABLE B.—Business results of the sugar factories in the German Customs Union.

Fiscal years.	Taxed sugar-beets (Table A, column 10) produced.			Out of 100 kilograms taxed sugar-beets were produced—				Out of 100 kilograms of juice were produced.—		To manufacture 100 kilograms raw sugar there were beets consumed—	
	Out of juice (column 2).			Juice.	Raw sugar.	Mo-lasses.	Total salable produce (col. 7 & 8).	Raw sugar.	Mo-lasses.		
	Juice.	Raw sugar.	Molasses.								Total sal-able produce. (Column 3 and 4.)
I.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
	100 kilos.	100 kilos.	100 kilos.	100 kilos.	Kilos.	Kilos.	Kilos.	Kilos.	Kilos.	Kilos.	100 kilo.
	2,629,931	1,864,419	638,917	2,503,336	11.68	8.28	2.84	11.12	70.89	24.29	12.87
	3,716,170	2,625,511	915,887	3,541,398	11.68	8.25	2.88	11.13	70.65	24.65	12.11
	4,121,142	2,910,407	1,058,183	3,968,590	11.68	8.25	3.00	11.25	70.62	25.68	12.12
	3,680,442	2,564,124	976,028	3,540,152	13.35	9.30	3.54	12.84	69.67	26.52	10.75
	5,028,183	3,580,482	1,339,524	4,920,006	12.08	8.60	3.22	11.82	71.21	26.64	11.62
	4,055,036	2,894,227	1,111,011	4,005,238	11.42	8.15	3.13	11.28	71.37	27.40	12.27
	5,155,951	3,780,091	1,228,128	5,008,219	12.60	9.24	3.00	12.24	73.32	23.82	10.82
	5,761,803	4,261,551	1,336,515	5,598,066	12.45	9.21	2.89	12.10	73.96	23.20	10.86
	5,544,094	4,094,152	1,313,709	5,407,861	11.54	8.52	2.73	11.25	73.85	23.70	11.74
	7,393,360	5,559,151	1,649,842	7,208,993	11.69	8.79	2.61	11.40	75.19	22.32	11.37
	7,740,044	5,997,222	1,508,129	7,505,351	12.34	9.56	2.40	11.96	77.48	19.48	10.46
	10,935,556	8,319,953	1,963,047	10,283,000	12.50	9.51	2.24	11.75	76.08	17.95	10.51
	12,168,794	9,401,093	2,079,781	11,480,874	13.65	10.54	2.33	12.87	77.25	17.09	9.49
	14,486,187	11,230,303	2,596,997	13,827,300	13.93	10.79	2.50	13.29	77.52	17.93	9.26
	10,257,772	8,081,049	1,801,775	9,882,824	14.51	11.43	2.55	13.98	78.78	17.56	8.75
	12,459,832	9,856,278	2,158,872	12,015,150	15.00	11.87	2.60	14.47	79.10	17.33	8.43
	7,195,894	5,438,751	1,479,771	6,918,522	12.94	9.78	2.66	12.44	75.58	20.56	10.23
	age of sixteen years										

TABLE D.—Sugar consumption and revenue from sugar duties in the German Customs Union.

Fiscal years.	I.	Production of raw sugar.			Imports of sugar, reduced to raw sugar.			Production and imports together.			Exports of sugar, reduced to raw sugar.			Consumption of sugar computed to raw sugar.		Internal revenue.					Per head of the population.
		2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.								
		100 kilos.	100 kilos.	100 kilos.	100 kilos.	100 kilos.	Kilos.	Marks.	Marks.	Marks.	Marks.	Marks.	Mks.	In the whole. (Column 4 and 5.)	Per head of the population.	Marks.	Marks.	Marks.	Marks.	Marks.	Mks.
'72		1,864,419	496,332	2,360,751	142,757	2,217,994	5.5	36,014,691	12,498,225	48,512,916	3,875,916	44,637,000	1.11	2,217,994	5.5	36,014,691	12,498,225	48,512,916	3,875,916	44,637,000	1.11
'73		2,625,511	270,852	2,896,363	179,382	2,716,981	6.6	50,904,813	7,127,469	58,032,282	3,201,150	54,831,132	1.33	2,716,981	6.6	50,904,813	7,127,469	58,032,282	3,201,150	54,831,132	1.33
'74		2,910,407	289,530	3,199,937	216,550	2,983,387	7.2	56,460,222	7,778,976	64,239,198	3,595,569	60,643,629	1.46	2,983,387	7.2	56,460,222	7,778,976	64,239,198	3,595,569	60,643,629	1.46
'75		2,564,124	276,907	2,841,031	108,134	2,732,897	6.5	44,107,920	7,217,593	51,325,513	1,641,786	49,683,727	1.18	2,732,897	6.5	44,107,920	7,217,593	51,325,513	1,641,786	49,683,727	1.18
'76		3,580,482	212,532	3,793,014	561,209	3,231,805	7.6	66,580,546	5,672,131	72,252,677	8,888,608	63,364,069	1.49	3,231,805	7.6	66,580,546	5,672,131	72,252,677	8,888,608	63,364,069	1.49
'77		2,894,227	125,060	3,019,287	603,538	2,415,749	5.6	56,800,570	3,353,926	60,154,496	11,389,541	48,764,955	1.14	2,415,749	5.6	56,800,570	3,353,926	60,154,496	11,389,541	48,764,955	1.14
'78		3,780,091	88,830	3,868,921	967,785	2,901,136	6.7	65,455,491	2,369,082	67,824,573	17,855,173	49,969,400	1.15	2,901,136	6.7	65,455,491	2,369,082	67,824,573	17,855,173	49,969,400	1.15
'79		4,261,551	79,710	4,341,261	1,380,768	2,960,493	6.7	74,059,961	2,111,772	76,171,733	25,359,970	50,811,763	1.16	2,960,493	6.7	74,059,961	2,111,772	76,171,733	25,359,970	50,811,763	1.16
'80		4,094,152	65,842	4,159,994	1,344,857	2,815,137	6.3	76,875,459	1,729,536	78,604,995	24,141,395	54,463,600	1.23	2,815,137	6.3	76,875,459	1,729,536	78,604,995	24,141,395	54,463,600	1.23
'81		5,559,151	56,073	5,615,224	2,839,039	2,776,185	6.8	101,163,969	1,480,967	102,644,936	56,547,988	46,096,948	1.12	2,776,185	6.8	101,163,969	1,480,967	102,644,936	56,547,988	46,096,948	1.12
'82		5,997,222	57,330	6,054,552	3,144,103	2,910,449	6.4	100,351,163	1,518,056	101,869,219	43,412,561	56,456,658	1.29	2,910,449	6.4	100,351,163	1,518,056	101,869,219	43,412,561	56,456,658	1.29
'83		8,319,953	66,012	8,385,965	4,725,514	3,660,451	8.1	139,954,448	1,730,108	141,684,556	74,397,666	67,286,890	1.49	3,660,451	8.1	139,954,448	1,730,108	141,684,556	74,397,666	67,286,890	1.49
'84		9,401,093	53,761	9,454,854	5,958,144	3,496,710	7.7	142,690,084	1,400,481	144,090,565	96,302,249	47,788,316	1.05	3,496,710	7.7	142,690,084	1,400,481	144,090,565	96,302,249	47,788,316	1.05
'85		11,230,303	53,035	11,283,338	6,737,274	4,546,064	9.9	166,443,012	1,378,602	167,821,614	128,452,707	39,368,907	.86	4,546,064	9.9	166,443,012	1,378,602	167,821,614	128,452,707	39,368,907	.86
'86		8,081,049	55,745	8,136,794	5,003,215	3,133,579	6.8	113,125,068	1,434,687	114,559,755	90,067,544	24,492,211	.53	3,133,579	6.8	113,125,068	1,434,687	114,559,755	90,067,544	24,492,211	.53
'87		9,856,278	46,779	9,903,057	6,611,280	3,291,777	7.0	131,213,410	1,231,770	142,445,180	114,181,546	28,263,634	.60	3,291,777	7.0	131,213,410	1,231,770	142,445,180	114,181,546	28,263,634	.60
Average in sixteen years....		5,438,751	143,395	5,582,146	2,532,722	3,049,424	7.0	89,512,552	3,752,086	93,264,638	43,956,961	49,307,677	1.13	3,049,424	7.0	89,512,552	3,752,086	93,264,638	43,956,961	49,307,677	1.13

CAUSES OF AGRICULTURAL DEPRESSION IN FRANCE.

The question of the hour in France, the all-important subject which most engages the attention of thoughtful men, is the extreme depression which has fallen upon agricultural interests in this country and the steadily increasing embarrassments which now weigh upon proprietors and cultivators of the soil. It is only within a few months past, since the statistics of last year's vintage and harvests were published, that the real nature of the situation has been generally understood and openly discussed. It is the nature of agricultural misfortunes to operate more or less silently. If a great financial house becomes bankrupt, if a foreign war seems imminent, or an army loses a battle, the effect upon markets and values is immediate and often exaggerated. But a short crop, the touch of blight or epidemic upon the fields or the flocks of the farmer, anything in short which discourages rural investments, may even increase the value of the corporate and public securities with which capitalists and financial writers are chiefly concerned. The values of food products are no longer governed by local harvests, and since breadstuffs and meats have grown steadily cheaper during the past few years, it is but natural that the industrial classes, in cities and villages, should have supposed, as long as their employment and wages continued, that all was going well.

From this delusion there has come during the past few months a general and rude awakening. The vintage of 1887 was not only the smallest that had been gathered for many years, but the prices at which the new wine was sold were from 30 to 50 per cent. below those of the preceding year. In the values of all domestic animals there has been a decline estimated at from 45 to 50 per cent. during the past six years. In presence of a constantly increasing product of foreign wheat and a declining market, the increased duties on cereals imported into France have simply augmented the revenues of the Government, without more than slightly enhancing the local prices of breadstuffs. Wheat growing in France no longer yields a profit to the farmer, whose situation has become so embarrassing that some of the more radical French economists now declare that the only possible means of salvation for the agriculture of Central Europe will be for France, Germany, Austria, and Italy to sink all political antipathies and jealousies and form an international customs union to exclude all food products from Russia, India, Australia, and America.

In a report from this consulate, dated the 28th December last, some account was given of the steadily decreasing acreage and annual product of the principal and by far the most valuable

The following table will show the acreage of productive vineyards from year to year since that period, the varying vintage, and the progress of wine exportation and import:

Years.	Acreage in vines.	Vintage.	Wine.	
			Imports.	Exports.
	<i>Acres.</i>	<i>Hectoliters.</i>	<i>Hectoliters.</i>	<i>Hectoliters.</i>
1877.....	5,798,522	56,405,000	707,000	3,102,000
1878.....	5,673,688	48,729,000	1,603,000	2,795,000
1879.....	5,539,004	25,770,000	2,938,000	3,047,000
1880.....	8,447,526	29,667,000	7,219,000	2,488,000
1881.....	5,436,317	34,139,000	7,839,000	2,572,000
1882.....	5,276,733	30,886,000	7,537,000	2,618,000
1883.....	5,179,329	36,029,000	8,980,000	3,093,000
1884.....	5,043,001	34,781,000	8,115,000	2,470,000
1885.....	4,919,017	28,536,000	8,182,000	2,580,000
1886.....	4,841,214	25,063,000	11,011,000	2,704,000
Average for ten years	5,315,435	35,000,060	6,413,000	2,747,000
1887.....	4,804,262	24,333,329	10,582,000	2,187,000
Deficit	511,167	10,666,671	* 4,169,000	† 560,000

* Increase.

† Decrease.

Commenting upon these sadly eloquent statistics, the Journal de l'Agriculture enters upon a calculation to find what has been the actual loss which France has sustained through this decline in her wine product. Assuming 1877 as a normal year, estimating the average market value of each year's vintage at 20 francs per hectoliter and funding at 5 per cent. interest the cumulating deficits of each subsequent year, the writer constructs the following exhibit:

Years.			Deficit compared with 1877.
			<i>Francs.</i>
	<i>Hectoliters.</i>	<i>Francs.</i>	
1877.....	56,405,000	1,128,100,000	.....
1878.....	48,729,000	974,580,000	153,520,000
1879.....	25,770,000	515,400,000	612,700,000
1880.....	29,667,000	593,340,000	534,760,000
1881.....	34,139,000	582,780,000	445,320,000
1882.....	30,886,000	617,720,000	510,380,000
1883.....	36,029,000	720,580,000	407,520,000
1884.....	34,781,000	695,620,000	432,480,000
1885.....	28,536,000	570,720,000	557,380,000
1886.....	25,063,000	501,260,000	526,740,000
1887.....	24,333,329	486,666,580	641,433,420
Deficit			4,922,233,420
Cumulative interest at 5 per cent. on each year's deficit.....			257,742,812
Total loss			5,179,976,232

in ten years through the diminished product of the vine alone. Nor is this all. In 1877 the exports of wine were more than four times greater than the imports, while in 1887 the imports were five times greater than the exports, and the adverse balance of value goes to augment the steadily increasing drain upon the wealth of the country.

Figures so vast as the foregoing are not easily comprehensible to the average intelligence, and in order to put the case into a concrete and more practicable form, a recent writer (Mr. Cazeaux) cites as an illustration a farmer owning fifty acres of good vine land, which produced a fair average quality of ordinary wine, such as sold ten years ago for 20 francs per hectoliter at the close of the autumn vintage. In 1887 this man raised 564 hectoliters of wine, which he sold for 11,280 francs. All expenses of cultivation, taxes, utensils, and maintenance of family are carefully put down, and amounted for that year to 9,900 francs, leaving a net profit of 1,380 francs, which was invested as savings at 5 per cent. interest. From that date the wine crop of this farmer for each subsequent year is made to fluctuate in exact accordance with the gross vintage of the entire country, so that in 1878 his vines yielded only 487 hectoliters and 257 in 1879. But in this latter year the short crop caused an advance in the price of new wines, and our peasant's 257 hectoliters were sold for 25 francs each. He also reduced by one-quarter his consumption of meat and made several other economies, for all of which due credit is given. Nevertheless his expenses for 1879 exceeded his receipts by 1,800 francs, so that the savings of 1877 were absorbed, and he was obliged to borrow 420 francs to balance the accounts of that disastrous year.

In this way the fortunes of this honest cultivator, who stands as the type of an immense class in France, are followed in minute detail through the ten years which closed with the season of 1887. By reason of the cheapening of clothing, meat, and bread, he had been able to make some economies; but these fell so short of balancing the deficit in his crop, and the increased cost of vine culture with sulphide of carbon and other remedies for phylloxera, oïdium, mildew, etc., that at the end of the decade he finds himself *in extremis*, his implements and buildings worn out and suffering for repairs which he can not afford to make, and his land burdened with mortgages, the interest of which he finds it difficult to pay. For the large class of small farmers who cultivate leased land the case is still worse, for in addition to all the foregoing difficulties they have the annual rent of their land to pay. If, instead of being a wine-grower, our farmer lives in northern or central France and devotes himself to wheat growing his case is scarcely better. The wheat that he sold for 28 to 30 francs per 100 kilos ten years ago now

pork, frozen mutton, and hides are sold at prices which leave him hopelessly out of competition. The great government contracts for cured meats for the French army and navy are filled in Chicago and Buenos Ayres. In lumber and many other coarse materials the case is equally forbidding. Staves from Trieste, doors, window-frames, and dressed flooring from Sweden and Canada, are offered at any French seaport for less than the native lumber in the rough cost here ten years ago.

China, Japan, and cheap quick transportation have ruined French silk culture. Aniline dyes have destroyed the culture of madder, which only a few years ago made the fortune of a large district in the valley of the Rhone.

There is, in fact, not a single agricultural or natural product of France which is not now produced in profusion by new countries at a comparatively nominal cost, and the same is true, with but trifling variations, of Germany and Italy. In Italy there is not sufficient capital to employ the legions of willing laborers, and this redundant population is pouring in steadily increasing streams to North and South America. In Germany emigration has reached proportions which are thought likely, unless checked, to compromise the vitality and industrial capacity of the race.

Such is the situation, such the problem, which modern civilization has entailed upon the governments of central and western Europe. France, with her many technical industries, her frugal and industrious people, and her vast accumulated wealth, has hitherto been able to meet this steady decline in her agriculture bravely and hopefully, but the strain is now beginning to be seriously felt. The population of many rural departments is steadily diminishing as the discouraged peasants abandon the hard struggle and seek employment in the cities and larger towns, where the labor market is already overstocked, and the competition with cheap foreign labor becomes more desperate day by day.

There are in Marseilles alone more than 50,000 Italians, the majority of whom are ordinary laborers and who enact here a rôle similar to that of the Chinese in the Pacific coast States a few years ago.

II.

Such in brief is the present agricultural and industrial situation which confronts the people of France. It is recognized that unless some general and effective remedy can be devised there will be in store still darker days, not only for this country but for the whole of central Europe. The recourse of protective duties has been tried; but, on the whole, with only negative results, and public opinion is dividing men into two great camps—the extreme protectionists and the advocates of free trade. Without venturing any judgment or opinion upon this complicated question, it is fairly within the province of this report to state substantially the attitudes and arguments of the opposing parties.

The extreme protectionists follow mainly the lines indicated

relations and placed the old and worn countries of central Europe at such a disadvantage as to not only justify but compel a resort to high import tariffs or absolute exclusion of food products from the United States and other new and highly productive countries." Advocates of this faith point to the phenomenal prosperity of the United States under a protective system, and to the rapid development of the beet-sugar industry and certain branches of manufacture in Germany under the high import duties and export bounties which have prevailed in that country during the past ten years. They insist that protective duties on cereals and meats have failed to be effective in France only because they have not been high enough, and urge that they be made practically prohibitive.

On the other hand, the commercial and operative classes, the merchants and vessel owners of Marseilles, Havre, and Bordeaux, the railway managers and the great army of wage-earners cry out against protective duties on food as barbarous, and demand that the present duties on cereals, meats, coffee, sugar, and all the raw materials of manufacture shall be abolished.

Perhaps the case of the free-trade party has been nowhere more cleverly and forcibly argued than in the publications of the French Chamber of Commerce, at London, an association which includes the more prominent French business men who are established at the British capital. In the periodical bulletins of this society, which are circulated largely throughout France, are given reports and statistics comparing the industrial progress of the two countries, the relative cost of food and clothing, the speed and cost of freight transport by rail, and many other things, quite to the disadvantage of France. Bread costs 30 per cent. and meat 20 per cent. more at Paris than at London; petroleum, 19 centimes per litre against 50 and 60 in France, and so on through a long list of the necessities of daily living. The society insists that the commerce and manufactures of France are being ruined by protective duties and demands.

The abolition, total, immediate and without conditions, of all monopolies and protective duties whatsoever which affect agriculture, manufactures, and navigation.

Between these two extremes, the statesmen of not only France, but of her continental neighbors as well, are seeking to discover paths which, without unduly sacrificing agriculture on the one hand or commerce and manufactures on the other, and the national revenues above all, shall lead to prosperity and relief. The more deeply this problem is studied the more formidable its difficulties appear. — MARSEILLES, *May 2, 1888.*

FRANK H. MASON,
Consul.

ernment bill would shortly be introduced to provide for state pensions to work people incapacitated by age or infirmity to support themselves. The effect of this measure, if accepted by the confederate German governments, would be of an epoch-making character. It would do much to soothe the feelings of a class rendered bitter and discontented by neglect, and would go farther to stop the dissemination and reduce the popularity of social democratic views than any amount of repressive legislation. The law, however, has not yet been passed, so that the general situation is still much as it was.

Among the most prominent changes to which I may point is the increase in the number of juvenile workers. The employment of children in some large cities does not, as a rule, offer any occasion for special criticism. The little ones are mostly engaged in such branches of industry as the manufacture of fancy paper, drapery, artificial flowers, etc., by which their strength is not overtaxed, but on the contrary the work is both light and healthy. The increase in the employment of children in factories is, however, a much more serious matter. It frequently happens that boys of twelve to fourteen years of age, and even younger, when school obligations have not ceased, are employed on steam brick-yards in company with men, more particularly for the purpose of turning the bricks laid out to-day. In such cases no practical supervision is possible on the part of the factory owner, and the moral danger which the children incur is considerable and past redemption.

It is more especially in the stone, clay, and mineral industries that the number of juvenile workers of the male sex has increased. Only in the glass industry has the reverse been the case, the reason being that the modern improved methods of manufacture adopted in the glass factories render such labor superfluous.

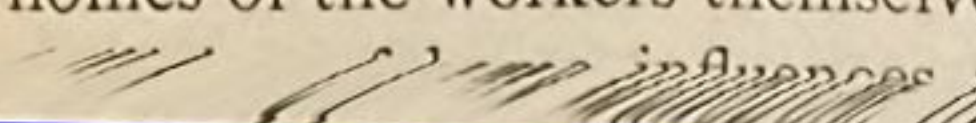
It is to the credit of factory owners that the regulations and laws affecting juvenile labor are only violated in very few cases. This may be due to the circumstance that every factory in which workers are employed is subject to an official inspection once in every month. The actual number of instances in which these regulations were reported as having been violated was, for instance, in the city of Berlin, 44 during the year 1886.

A considerable increase in the number of female workers in the large cities has taken place, and these constituted in the city of Berlin in 1886 not less than 25 per cent. of the working population. The moral condition of these women seems to be undergoing a gradual improvement. At any rate, it must be admitted that there is no great element of danger to their moral and physical development in the very nature of the work they perform. In this respect Berlin is naturally favored. The greater portion of industry in all large cities in Germany consists of home industry. Whatever evil influences the working girls may be exposed to, they are not specifically those of factory life. The lowness of wages, the catastrophes of trade, over-competition and over-production, which are common eventualities

Statistics prove that those branches of industry which are most dangerous to the health of female workers, and exert more especially a deleterious influence on the corporeal development of working girls, are mining, ore smelting, and peat digging. Not one of those branches of industry is represented in the city of Berlin, for example. If, therefore, the moral condition of the female workers in that city is on the average a deplorable one, its cause must be sought for in the influences and associations of the home life, for it is at home that the work is mainly done and the worker lives.

The question naturally arises, to what extent do the wealthier and leisured classes most nearly interested in the well-being of the working men and working women—I refer, of course, to the manufacturers and their wives—seek by the expenditure of their superfluous wealth, or, better still, by their personal sympathy, to raise the moral condition of those upon whom their bread depends? It must be replied that more might be done in this direction than actually is done. Unhappily, the wives of the manufacturers and wholesale merchants all the world over do not seem to interest themselves very intimately in the weal and woe of their husbands' employés. There is, in fact, a deplorable lack of sympathy and confidence on both sides. To speak of Berlin in particular, the number of benevolent institutions there, compared with other German cities, is strangely small in proportion to the size of the place, and has shown no increase during the past three years, although the working population has been rising rapidly. The attitude of the clergy is neither very emphatic nor particularly serviceable, for it can not be said that they exercise any great influence upon the life or thought of the majority of the well-to-do in the German capital. The churches in Berlin are few and far between, and by no means largely or regularly attended. The opportunities, therefore, of urging the claims of the industrious poor upon the attention of their more fortunate brethren are not many, and as the priesthood is divided into more than one hostile camp, these opportunities are too often sacrificed to an aimless agitation for this party or the other, to a petty propaganda of Christian-socialistic or anti-semitic doctrines. Under these circumstances it is not surprising that the proletariat looks to itself to help itself, and that the majority of the working classes are the supporters of the social democratic party.

The savings-bank and trade-union systems show a very extended development. They belong, however, to a special category altogether, and spring from the will of the people themselves. They may be classed with beneficial, but not with benevolent, institutions.

Berlin industry is, as I have already stated, mostly carried on in the homes of the workers themselves. It is therefore only by bringing the most
 influences to bear upon these homes that the moral and

THE TRADE OF INDIA.

The following is the official summary statement of the foreign trade of India for the eleven months ending February, in the fiscal years 1886-'87 and 1887-'88:

Articles.	Imports, eleven months ending February—		Exports, eleven months ending February—	
	1887-'88.	1886-'87.	1887-'88.	1886-'87.
Animals (living).....	£185,098	£186,414	£92,689	£61,230
Articles of food and drink.....	5,099,424	4,666,072	15,847,468	17,302,021
Hardware and cutlery (including plated ware).....	745,864	578,178	4,708	3,810
Metals	3,540,764	3,087,127	31,228	27,520
Machinery and mill work	1,197,408	900,178	66	211
Railway plant and rolling stock.....	1,684,759	961,632	.....	.....
Chemicals, drugs, medicines, etc.....	690,495	645,532	10,433,388	10,892,335
Oils.....	1,003,225	926,761	313,102	305,193
Raw materials and unmanufactured articles	2,686,152	2,111,641	23,838,634	21,981,819
Yarns and textile fabrics	21,105,013	22,042,713	5,116,485	4,001,022
Apparel.....	873,295	751,204	63,381	52,960
Other manufactured articles.....	3,359,488	3,017,640	2,467,740	2,305,908
Total.....	42,170,985	39,875,092	58,208,889	56,934,029

THE PROVINCE OF KIANG-SU, CHINA.

The province of Kiang-Su lies between $35^{\circ} 10'$ and $31^{\circ} 20'$ north latitude and $5'$ to 5° east longitude from Peking. The area is about 43,000 square miles, and the population, which can not be accurately stated, is generally estimated to be from thirty-five to forty millions.

Kiang-Su is divided into twelve departments and subdivided into sixty-seven districts. It contains eight cities of the first class, nine of the second, and sixty-two of the third. The best known of these, commercially, is Shanghai. Chinkiang, Nanking, and Soochow are also noted for their size and commercial importance.

In the southern part of the province there are a few mountains, but otherwise the soil is level and fertile. The people are industrious and easily governed, and the history of China records the names of many eminent men whose birthplace was Kiang-Su.

A complete net-work of canals and navigable streams exist throughout the province. In such a system of intercommunication we find one of the causes that has long resulted in making Kiang-Su one of the most populous and prosperous provinces in the Empire. It is said that you can go to every man's door in a boat.

In describing the resources of this province and its trade one must depend very largely upon observation, for statistics regarding population or production, if kept at all, can not be relied on, and therefore there is no way of obtaining them other than by general information. Every three years

transmitted through the provincial authorities to the capital. The system is not honestly carried out, the tendency being to exaggeration, and the door certificates are often filled in according to the census taker's own opinion of what it should be without the labor of verifying it. We have to be content with what we can learn from observation, and as the water-ways afford a means of traversing the province in all directions a pretty fair idea may be obtained in this way. Wherever one goes in Kiang-Su he sees evidences of a vast population and extensive trade. The cities have a busy look; the canals and rivers are crowded with boats, and in the fields, at all seasons of the year, some sort of work is going on.

The Kiang-Su farmer does not turn up his soil deeper than 8 or 10 inches, but he labors with this thin covering of earth perseveringly, and in the course of twelve months, in some instances, five different crops are obtained. It is not usual for one farmer to cultivate more than 2 or 3 acres.

LAND TENURE.

A successful farmer may acquire more land than this, but he prefers to rent the surplus and with his family make the most of a small piece that he can easily overlook.

There are no fences in this part of China. Boundary stones mark the different holdings, yet disputes over boundary "lines" are no less frequent than in other parts of the world. The system of dividing the province into departments and districts and redivisions of districts extends until the Tu is reached, which includes but a small section under the superintendence of an officer called a ti-pau. He keeps a record of the land transfers and reports them to the magistrate of a district who grants title deeds. He holds his office for a year, it being the custom to rotate the office among the responsible men of the section. When a piece of land is sold a conveyance is drawn up and signed by the principals and also by several friends or brokers who lend their services to the negotiation, which is never conducted between buyer and seller alone. These "middle-men," as they are called, receive a small commission, and the ti-pau exacts about 5 per cent. of the purchase-money for his fees; but the parties often conspire to defraud him by naming a smaller sum in the conveyance than is actually stipulated.

While theoretically all the land of China is the Emperor's, and his subjects may do no more than rent it, yet they buy and sell land freely. A father may leave a quantity of land which is to be divided between two sons, and to avoid the expense of securing separate deeds they cut the original deed diagonally into two equal parts, the half deed being recognized as a good title to one-half the original lot.

About the year 1865 it became necessary to issue new deeds for all the land in this part of China. The Tai-ping rebellion, a fierce war, extending
 little, had so desolated

THE TAI-PING REBELLION.

During the years 1860-'64 the operations of the imperial forces against the rebels were carried on principally in this province, south of the Yangtse River, and on the border of the adjoining provinces of Che-kiang and An-hui. Although twenty years have passed since this rebellion was suppressed the scars of the terrible conflict still are to be seen throughout the province. Many towns and villages that were destroyed have never been rebuilt, and even portions of the great cities of Nanking, Hangchow, and Soochow are still in ruins. Some of the present streets of those cities are built over the débris of buildings then demolished.

Recovery from the effects of that war is gradually going on. Looms in the silk districts, while not yet approaching the number worked twenty-five years ago, are becoming more numerous every year, and increasing prosperity is demanding that the ruins in the larger cities, long since grown over with rank vegetation, be removed and their streets rebuilt.

The chief of the enormous faction who sought to overthrow the Tartar Government was a remarkable character, and his adherents were fierce, desperate, and, in some instances, able men. At the outset the rebels aimed not only at overthrowing the Government but the establishment of Christianity and the extermination of heathen idolatry and pagan superstition. Their chief, originally of the most humble circumstances, a native of the province of Kwang-tung, having heard something of the principles of Christianity, and becoming much interested, sought out an American missionary at Canton, with whom he pursued a study of Christian doctrines. He returned to his native village and claimed to have held communication with God.

What proved to be one of the greatest of modern wars was the result of a chain of national catastrophies, all tending to weaken the power of the Government and to create discontent among the people. When this rebel chief undertook to conquer China the country was in the poorest possible position to resist his rebellion.

With the coming of foreigners to what had been hitherto a sealed nation, and especially with the entry of military operations (beginning with the British war with China of 1841-'42), the introduction of fire-arms put a new power into the hands of the people. They were quick to observe the effect of organization and resistance and to appreciate the power of gunpowder now within their reach. Impoverished by a series of floods and famines, and smarting under the additional taxation consequent on the indemnity of \$21,000,000 demanded by Great Britain on account of the war, discontent spread among the people and made them ripe for rebellion. The rebel chief, Hung-ching-tseh, made a formal declaration of rebellion in 1850, and a year later assumed the title of "Heavenly Prince." In 1853 he established his court at Nanking and continued his operations against the imperialists with some success until 1859. The remaining

of Americans and Europeans in order to protect Shanghai from attack seems to have been the original idea which induced foreigners to enlist in the cause.

Out of this arrangement grew the "ever victorious army," which first, under General Ward, a native of Salem, Mass., and after his death under General Gordon, proved the effectual means of putting down the rebellion. In August, 1860, the rebel forces attacked Shanghai, but were repulsed by the combined French and English forces that manned the walls of the native city. It was at this period that Li Hung-chang, the viceroy of Tien-Tsin, and the leading statesman of China at the present time, laid the foundation of his successful career while filling the post of governor of Kiang-Su.

In the rebel headquarters trouble had arisen, and personal jealousies among the leaders had in a measure demoralized their army. Professing and enforcing a most rigid system of moral law in the earlier years of the rebellion, basing their code and worship on exaggerated interpretations of the Scriptures, they appear to have gone beyond the bounds of reason and ended in corruptions and cruelties that have not been equalled in modern times. Throughout Kiang-Su death and desolation were so widespread that the regained prosperity of to-day seems almost incredible.

We often hear the subject of China's failure to progress in the march of civilization discussed, but when the invasions, rebellions, and calamities in the way of floods and famines that have followed each other for centuries are considered, the fact that the country holds its own is a matter of wonder.

Year after year the Yellow River inundations desolate extensive sections of the country. During the present year the loss of life in Honan consequent upon the overflowing of this river is appalling. Two years ago the province of Kwang-Tung, of which Canton is the capital, was the scene of fearful floods. Famines usually follow floods, extending the time of suffering greatly.

Kiang-Su is fortunately situated. It is well drained, and has no mountain streams which, as in the northern provinces, swell to mighty torrents in a few hours. The climate is well suited to semi-tropical vegetation. In the open ports, where foreigners have created a demand for their own kinds of vegetables, the supply is generally forthcoming, but in a few cases only is the imported seed adapted to native consumption.

PRODUCTS.

The principal productions of Kiang-Su are rice, cotton, and silk. Beyond the records of the goods passing through the customs we have no statistics to inform us as to the annual crops, but some idea may be had of the rice crop

of Kiang-Su, estimating it at

COTTON.

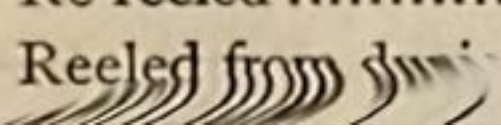
Notwithstanding the extensive importation of manufactured cottons into China the cultivation of the plant in this province is an important branch of industry. One sees women and children in the fields hoeing and picking it, and from the time it is gathered until it is woven into cloth the various manipulations appear to be monopolized by women.

The Chinese system of planting and cultivating cotton strikes any one accustomed to our methods in the Southern States as extremely crude. The seed is sown broadcast in among small grain crops about the months of March or April, or sown broadcast if planted by itself. When the wheat or oats is cut the small plant can then be seen. In either case, when it gets 6 or 8 inches high, from time to time, as it is growing, they pour or sprinkle over the beds liquid manure. I may remark that all of their crops are planted in beds rounded off from the top to a water furrow on each side. They hoe in among it the best they can, apparently without thinning it out. It is as thick almost as small grain. The stalks rarely attain a height of more than $2\frac{1}{2}$ to 3 feet on land rich enough naturally (and very richly fertilized besides) to produce under our system a heavy bale to the acre. The stalks are spindling and the bolls are so small that it will take from forty to fifty of them to make a pound of seed cotton, while they will not average more than six to the stalk. The cotton is rather dingy in color and of very short staple. They never use a plow in its cultivation, and when preparing the soil turn it up with wooden plows, the pattern of which is as old, I presume, as the days of Confucius. The experiment of using American seed has been tried, I am informed, but without much better results than in the case of their own seed, but the reason of this can be readily accounted for in their system of planting and cultivation. They gin their cotton on a gin worked by a pedal, which, while very crude, yet seems to pound the lint off the seed pretty well. An American hand gin ought to take well, and some of our ingenious mechanics should invent one that would answer the purpose.

The gin above referred to works on the principle of a clothes-wringer, with the exception that the rollers are made to revolve in opposite directions. The cotton is wound through and the seeds squeezed out as they meet the pressure caused by the rollers.

SILK.

The following return of the exportation of silk from Shanghai are for the year ending December 31, 1886:

	Bales.	Piculs (of $133\frac{1}{3}$ pounds).
Raw.....	44,962	37,381.26
Yellow.....	7,208	8,165.54½
Re-reeled		
Reeled from 		

Of this the United States took as follows:

	Bales.	Piculs (of 133 $\frac{1}{3}$ pounds).
Raw.....	6,661	6,785.87
Yellow.....	14	14.54
Re-reeled	45	45.42
Reeled from dupions	nil	.....
Raw, wild.....	62	61.71
Waste	12	34.79
Cocoons	153	262.09

The silk industry also affords occupation for women, and as their mode of living does not require much time in the preparation of food the work done by them is an important feature in Chinese economy. It perhaps counterbalances the wasteful habits of their opium-smoking husbands and fathers.

The success obtained by the Chinese in the silk industry is due to the careful exactness with which they manipulate the silk-worm. This delicate insect requires the greatest care and skill, and the patient temperament of the Chinese is appropriate to its development. An ancient and distinguished Chinese writer, whose treatise on the production of silk is authoritative, says:

An agreeable place ought to be chosen for the apartment of the silk-worms. It must be on a dry and rising ground and near a rivulet; because it is necessary to wash the eggs often, and running water agrees best with them. Their lodgings ought to be retired from all dunghills, sinks, cattle, and all noise. Disagreeable smells and the least fright make strange impressions on so nice a brood. Even the barking of a dog and the crowing of a cock put them into disorder when nearly hatched. The room must be built square, and may serve for other uses when the silk season is over. Its walls must be very close for the sake of warmth; the door south, at least southeast, but never in the north, with a window on every side to receive and have a free passage for the air, as occasion requires. These windows, which are almost always kept shut, are of white translucent paper, behind which are movable mats placed so as to admit or shut out light as occasion requires.

Superstition enters into the system of raising silk-worms as well as into nearly all the habits of the Chinese. In some localities persons in mourning are not allowed to go near the growing worms until forty-nine days of the period of mourning have elapsed, and those who attend them must abstain from eating certain food. They are careful never to enter the room in which the worms are kept without having sprinkled themselves with water, which is kept for this purpose in a basin at the door. The occupation of rearing silk-worms is considered a most honorable one, and Chinese authors record several instances where Empresses have been engaged in hatching and raising them.

The cultivation of the mulberry also requires great care and skill, and to

buds. In describing the methods of the Chinese in cultivating the mulberry I can do no better than quote from a French writer, whose comments are full and in reality are literal translations from Chinese authors:

The best mulberry trees are those that give the least fruit, because the sap is less divided. There is a method to render them barren as to fruit but rich in leaves, and it is by feeding poultry with mulberries, either fresh picked off the tree or dried in the sun, and then taking their dung and dissolving it in water; the mulberry seed is steeped therein, after which they sow it. The young trees that have been too much stripped of their leaves in the first three years suffer for it afterwards, becoming weak and backward. The same happens to those trees whose leaves and leafless branches are not pruned. They are in their prime vigor in the third year, but begin to decline toward the fifth, when the roots gall. The remedy is in the spring to unearth the roots and cut off the most entangled, and then cover them with a proper mold, sprinkling it with water. When the mulberry trees grow old, there is an art to recover them by cutting off the exhausted branches and grafting sound shoots in their stead, by which means a sap glides through the whole body of the tree and enlivens it. This operation should always be made in the beginning of the second month, which answers to our March.

To prevent the trees from languishing you must frequently examine if certain worms have not entered and lodged their seed in them. These worms are killed by pouring a little of the oil of the tong-tree fruit in upon them. Any other strong oil would certainly produce the same effect.

The soil proper for the mulberry trees ought not to be strong nor too hard. Ground newly broke up is very good for the purpose. In the provinces of Chekiang and Kiang-Su, whence the best silk comes, care is taken to mend the soil with the mud of the canals cut through the country, which are cleaned every year. The dung of animals and even of the silk-worms, with ashes, is also proper manure. Small garden seeds sown between these trees are of no damage to them, provided the plow does not touch the roots. But the main and most profitable point is to be very watchful in having the mulberry trees pruned in a right season and by a skillful hand. This makes them earlier and more abounding with leaves, which are thereby better filled and more relished by the silk-worms. The branches about the middle of the tree ought particularly to be lopped away, that the leaves may be picked the more commodiously. A leaf gatherer who places himself always in the center of the tree will with this precaution gather more in one day than another without it could in several days, which is no small saving, besides being a readier way to supply the hungry worms. A mulberry tree well pruned yields as much as two others.

The month of January is the season for pruning the mulberry trees, which is done in the same manner as vines, particularly arbor vines. It is sufficient that the branches which are left have four buds. The overplus ought to be thrown away. Four sorts of branches must be entirely cut off: First, those that hang down toward the root; second, those that shoot inward toward the trunk; third, those that are forky; fourth, those which grow well otherwise but are too clustering and too much garnished. None but the branches that shoot outward from the tree are to be spared. The following spring they will be vigorous and flourishing, and their forward leaves will advance the maturity of the worms and the profit of the silk. About the close of autumn, before the mulberry leaves grow yellow, they ought to be gathered and dried in the sun, then to be pounded small and put into large earthen pots stopped with clay, and so kept in a place free from smoke. In the spring these beaten leaves will be like meal, and proper to be given to the worms after molting.

In the provinces of Chekiang and Kiang-Su, where the best silk is produced, they are very careful to hinder the growth of the mulberry trees and lop them to prevent their exceeding certain height. When the trees

left unpruned and sticking their ends in manured soil. In December following, when these branches will have taken root, they are dexterously cut from the body of the trees and transplanted in the proper season. They also sow the mulberry seed, which must be chosen from the best trees and from the fruit that grows about the middle of the branches. This seed ought to be mixed with ashes of the burned branches. Next day the whole is to be stirred in water. When the water is settled the useless seed floats. That which sinks to the bottom ought to be dried in the sun and afterward sowed, mixed with an equal quantity of millet, which assists the mulberry trees, that then love the shade and defends them in growing from the scorching sun. When the millet is ripe they wait for windy weather and then set fire to it. The ensuing spring the mulberry trees shoot with a great deal more strength.

The branches must be pruned away till the plants are grown to a proper height, and then the tops must be cut to make the branches shoot out on the sides. At length the young mulberry trees are transplanted at the distance of 8 or 10 paces in lines 4 paces asunder; but the trees of one line must not be placed directly opposite to those of the next. It is likely they neglect symmetry in this because otherwise the trees might overshadow one another.

Among the other products of Kiang-Su are bean-cake, chinaware, hemp, hides, medicines, vegetable oils, paper, rhubarb, tobacco, wax, wheat, and wool.

MANUFACTURES.

In a country where the roads are only irregular foot paths and where railroads have as yet no existence, it is fortunate that the water-ways are so well distributed that an interchange of production can be conveniently carried on. Kiang-Su is a land of boats, and the building of them calls for an immense amount of capital and labor. There seems to be an endless variety of styles of construction, nearly every important city having its own type. In this part of the province the principal manner of propelling boats is by means of the *yu-loh*, an oar swung from the stern and bent so that the blade can be swung back and forth in the water, on the principle of a screw, by oarsmen who stand erect. It would be difficult to construct a more simple and effective means of propelling a boat. In narrow or crowded streams it is especially convenient.

At Nanking and other ports on the Yang-tse side oars are used, the oarsmen standing and facing the bow of the boat. Boats running on the canals when not favored by suitable winds are usually "tracked" or towed by coolies. A line is attached to the mast-head and harnessed to the trackers, who drag the boat along at the rate of 4 miles an hour.

An ingenious dispatch boat is used in this part of China which is rowed by foot-power. Half reclining in the stern the boatman swings a heavy oar with his feet and keeps headway by means of a paddle which he uses as a rudder. Keeping this paddle in place by putting it under his arm, his hands are free and he is thus enabled to take his food without stopping. A regular line of these boats plying between Shanghai and Soo-Chow make the run

forms one of the important industries of Kiang-Su. In this part of the country a small round bean is used. The machinery employed in the process is rude, yet it answers the purpose well.

At Ming-Hong, a village some 20 miles from Shanghai, there is a bean-cake establishment employing about fifty men. Water buffaloes (*bos bubalus*) propel the clumsy machinery, about thirty being required to do what one small steam engine could easily perform. Two ponderous stone wheels revolve in opposite directions and at the same time have a second motion, both of them being run around a stone platform, and at regular intervals a quantity of beans fall from a hopper and are ground beneath the heavy wheels. The oil that is expressed finds its way into a reservoir, and what is left is removed and distributed along a circular stone groove about 6 inches deep and 10 yards in diameter. A stone wheel, beveled to an edge, is run around in this groove and forms a most laborious but effectual method of pulverizing the beans. This beveled wheel is dragged around by a blindfolded buffalo. Being blindfolded he avoids dizziness, which constant traveling around a circle would produce, and is less likely to become insubordinate. After the pulverization process is completed the pulp is steamed. The fire used in keeping up steam is made with rice or wheat chaff. Handful by handful this light article is tossed into the fire, by which means great heat is secured. After steaming, the mass is pressed into cakes. The size of the cakes vary from 8 inches to about 30 inches in diameter, resembling the appearance of grindstones. The press consists of a horizontal frame on which a number of the forms are placed. Pressure is obtained by wedges.

Farmers take their beans to these establishments to be converted into cakes, and in some localities the bean-cake maker takes the oil for his recompense instead of money.

When soaked in water bean-cake makes a good winter fodder for cattle. It is also used as a fertilizer. An idea of the trade in this article may be obtained from the following showing, during 1886, in foreign bottoms: Bean-cake, 1,480,048.60 piculs ($133\frac{1}{3}$ pounds to the picul), valued at 1,196,077 Haikwan taels; beans, 1,898,873.41 piculs, valued at 1,937,260 Haikwan taels.

BEAN-CURD.

This article is used extensively as food. The preparation is simple and the cost low. The beans are reduced to flour, which is boiled until it attains the proper consistency. It is much relished by the Chinese, and possesses the properties of nourishment to a large degree. It contains a large percentage of casine, and it may be a good substitute for milk.

COTTON CLOTH.

The Chinese, as a nation, clothe themselves in cotton garments. The outer garment is

FOREIGN ARTICLES.

The hand looms are not sufficient to supply the demand, however, and about \$25,000,000 worth of foreign cottons are imported into Shanghai annually. In addition to these manufactures nearly all the articles that are required, such as furniture, utensils, tools, etc., are produced within the province. Particular localities produce particular articles of merchandise, and while there is no system of protecting inventions by patent or trade-marks, numerous articles of manufacture are known by "chops" or brands which obtain celebrity. Certain goods bearing a desirable brand often command many times the price of a similar article without it, but to all appearances equally good.

During 1886 there was imported at Shanghai 276,136 piculs ($133\frac{1}{3}$ pounds each) of railroad iron, valued at \$662,727. Old wire is also imported for the purpose of making nails, which, together with many articles for which we have no name, are made by hand.

BUILDING.

The Chinese have a very limited supply of timber. Such as they make use of in building is from small and inferior stuff, and is sawed up by hand. They make good bricks, which form the universal building material. After the burning process reaches a certain stage the piles are flooded with water, and in this way the bricks are turned out a gray color. The roofs are usually made of tiles, and nearly every province has its own style and size of bricks and tiles. The latter are made in a very simple manner. Clay is plastered around the sides of a tub evenly and then scored off into the desired sizes. They are baked in the same way as the bricks. The houses occupied by the masses are small and flimsily constructed. This is not due to their inability to build well, but to their poverty, which may appear inconsistent with the industrious and simple habits of these people, but it is one of the many paradoxes of China.

Their bridges and temples and the walls of their cities give evidence of their skill in building and engineering, but the tendency to huddle together in villages and cities and the dread of appearing to be possessed of wealth prevents any departure from the rule of cramped, uncomfortable, and unhealthy dwellings.

Throughout this province it would be hard to find a farmer's dwelling that would be considered good enough for a pig-pen with us. A wooden floor is a rarity, and with all that is said about "feng-shui," or lucky location, it would be hard to find a single house in central China where any attempt of a sanitary nature exists. No building is constructed without certain divinations which have reference to auspicious days, and are a part of *within the term of "feng-shui."*

rites by which the fiends of the air may be thwarted. There is no doubt that the miserable dwellings of the Chinese cause the great number of diseases and suffering they endure.

With a malarial climate to begin with, and utter ignorance of the principles of the laws of health, the result could not be otherwise than a race of comparative physical inferiority. Malarial complaints are of great variety, and where the pronounced forms may not be visible there exists dull enervating symptoms unfitting people for any more work than will suffice to keep body and soul together, and no doubt lead to the opium habit, the curse of China.

Some of their styles of building are ingenious and are worthy of imitation where economy of materials is the object desired. A substantial building, warm in winter and cool in summer, is made by using a large-sized flat brick laid so as to form hollow squares into which dirt is filled. In cold climates stables or barns built in this manner would be effective against the cold and at the same time cheap.

Another kind of wall is made of gravel and straw. The former is moistened and pressed into wooden frames and allowed to harden when the frame work is removed. The Chinese possess many fine bridges of stone. One noted bridge near Soo-Chow has over fifty arches. The walls of the cities exhibit an astonishing amount of what appears in these days wasted energy. The wall of Nanking is 27 miles in circumference and from 40 to 80 feet in height.

The fact that many of the walls surrounding the cities of China are centuries old prove the quality of their materials and workmanship.

In China a coarse paper is mixed with their mortar instead of hair. This paper is soaked and worked into the mortar just as we would mix in the hair and answers the purpose equally well.

DRAUGHT ANIMALS.

In central China the only branches of agricultural work not performed by man-power are plowing and pumping water into rice-fields, and for this work the water buffalo and the cow are brought into use. They are rarely if ever used double. The ordinary cow, or red cow as the Chinese call her, is admirably fitted by nature for the task of plowing, having a hump on her shoulders over which the yoke is fitted. The plow in general use is made of wood and answers the purpose of the Chinamen who only wish to turn over a few inches of soil. This ancient form of plow is guided by the right hand while the left is employed in guiding the animal by means of a cord attached to a ring fastened in the nose.

The pumps used for flooding the rice-fields are made of wood and like all other Chinese implements are a rude contrivance. A large wheel lying horizontally, a few inches from the ground, revolves on an axis, with cogs in a small wheel which keeps an endless chain of pockets in motion carry-

The buffalo, which is generally used for pumping, has to step over a portion of the machinery at each revolution, and being the least graceful of all animals, the whole thing appears to be a great waste of power and clumsy in the extreme. A thatched roof protects the buffalo and machinery from the weather. Another manner of operating the same form of pump is by a tread-mill apparatus worked by men. The natives in this section of China do not use beef as an article of food. The price of a full-grown cow or buffalo is from \$10 to \$30.

OPIUM.

A description of Kiang-Su and its inhabitants would be incomplete without a reference to the habit of smoking opium, which is so widespread that it is safe to say that nearly every family in the province is affected by it directly or indirectly. Much has been written on the subject, and even at this day a few endeavor to deny the harmfulness of the habit while a larger number attempt to belittle the moral and physical ruin it creates.

This line of argument, as a rule, is usually confined to those who are interested in the sale of the drug or those who have not had an opportunity of witnessing the results caused by its use. Aside from the heavy duties imposed upon the imported opium, which amounts to about \$150 per chest, there appears to be no restriction to the free indulgence in the habit. Even the eloquent warnings denouncing the habit and picturing the frightful degradation and misery that the opium smoker experiences before death removes his wretched body, which were formerly so frequently posted in public places, are rarely seen at the present time and the mandarins, who are forbidden to smoke opium under severe penalties, are much addicted to the habit, the regulations being practically of no importance. Opium smoking is a habit that may be inherited or acquired. Often the beginner takes a pipe now and then socially, and before he is aware of it he has become so attached to the effect produced that he can not give it up. Others try a pipe as medicine, hoping to find relief for their ailments, and in this way soon become victims to the habit, for it quickly takes hold of the system and few have the power to rid themselves of it when once acquired. It is an expensive habit to begin with, and out of all proportion to the average income of the Chinese. It also consumes a great amount of time, and the reclining position adopted in smoking tends to laziness, and utter demoralization seems to be the one result of inveterate smoking. — SHANGHAI, *February 2, 1888.*

J. D. KENNEDY,
Consul-General.

DISCONTINUATION OF LEKIN COLLECTIONS IN OPEN PORTS IN FORMOSA.

The Tsungli Yamên has agreed to instruct the governor of Formosa to
discontinue of lekin on native produce the property of foreigners

CAMEO GLASS OF BIRMINGHAM.

Stourbridge, within a few miles of this town, and within my consular jurisdiction, has a world-wide fame as a place of manufacture of fine and high-art glassware. I have recently visited it to gain some information as to the origin and manufacture of cameo glass, now forming an important factor in the shipments to the United States, and a monopoly enjoyed by this district alone, as nowhere else in the world is it produced.

BRIEF HISTORICAL ACCOUNT OF GLASS CAMEO.

That glass making dates back to the ancient Egyptians is pretty conclusive, from the fact that glass makers at work are represented on the tombs of Beni Hassan, 2000 B. C., and the engraved head of Queen Ybatason, wife of Thontines III, 1500 B. C., now in the British Museum, further corroborates and also shows that the art was by no means in its infancy at those periods. Articles of glass discovered in Egyptian mummy cases show that they well understood the composition, the coloring with metallic oxides, the making, and the engraving of it. That through friendly and warlike intercourse glass making was learned from them by the Phoenicians, Sidonians, Assyrians, and later by the Romans, who carried the manufacture to a very high state of perfection, is clear and well borne out by many existing examples. Those transcendent masters of art, the Greeks, although acquainted with the Egyptians at a very early date (first Græco-Theban war, 1225 B. C.), (Græco-Egyptian war, 460-465 B. C.), and so well qualified to beautify it, do not seem to have taken up glass making; at least few if any specimens of glass have been discovered among their ruins. Certainly they may have been robbed of their glass, as they were of their statuary and other works of art, by the raids made upon them by the Romans and others from time to time, but we have found no mention by contemporary writers of their having made glass.

The origin of the Etruscans is somewhat uncertain, they are said by some to have been an early Greek colony, with an innate love of art, and true artistic skill derived from their origin, and this theory is substantiated in some measure by the similarity of forms employed, and by their pottery and art works being decorated with subjects taken from incidents in the real and fabulous Grecian history. The Etruscans, like the Greeks, did not make glass themselves, but through conquest by the Romans, who were superior in arms (and defeated them, 506 B. C.), but who were much inferior to them in all matters of art. They found in the Roman glass a suitable medium for conveying their ideas of beauty, so that with art derived from the Greeks, and applied to glass by the Etruscans, and with a glass manufacture derived from the Egyptians and perfected by the Romans, were produced those grand specimens of which, perhaps, the celebrated Portland
finest yet discovered

The early meaning of the word cameo was simply an onyx (having different layers of stone), but the later designation of a cameo is an anaglyph on a precious stone. An anaglyph is when the figure is raised in relief, an intaglio when the figure is hollowed out.

The engraving of stones, gems, etc., is a very ancient practice. We read in Exodus XXVIII, 9th verse, that Moses (in 1491 B. C.) was commanded to "take two onyx stones and grave on them the names of the children of Israel," and in the same chapter, 11th verse, "with the work of an engraver in stone, like the engravings of a signet, shalt thou engrave the two stones with the names of the children of Israel;" also that Jezebel sealed the order for Naboth's death with the king's seal (1st Kings XXI, 8, date, 899 B. C.). The art is said to have originated with the Egyptians, who cut the hardest stones, as their "scarabei" testify, and passed at a very early period, more or less indirectly, to the Greeks and Etruscans, by whom it was carried to a state of perfection. We find that Theodorus of Samos engraved the ring of Polycrates 522 B. C., and that Pyrgoteles engraved seal rings for and produced a gem portrait of Alexander the Great 340 B. C., also that Tryphon engraved the celebrated cameo in the collection of the Duke of Marlborough, representing "the marriage of Cupid and Psyche," about 300 B. C.; this latter date seems to have been the flourishing period of the glyptic art.

Pyrgoteles worked in relief, and from his time the art may have risen gradually to that degree of perfection of which we possess such rich specimens. The engraving previous to his time was most probably intaglio.

As in the case of the coins of the period, which point to the excellence of the engravers' art in the producing of molds, they were often signed with the worthy artist's name. Thus the names of Dioscorides, Apollonides, Evænetus, of Syracuse, Cimon, etc., remind us of the most perfect works. The artist made use of the lathe, the maxium, the diamond point, and diamond powder. It is not surprising that the Venetians, who revived glass making about the thirteenth century, even in their most flourishing time did not imitate the cameo, for they lacked the manipulative skill of decoration.

Ancient glass that has happily come down to our time reveals the ravages made upon it by time, producing that voodscence and decayed appearance due to a great extent to a want of chemical knowledge in proportioning the material of which it is composed. Now that these difficulties in the manufacture have been overcome, by which it has been made to assume a more definite chemical compound, its durability has been much prolonged, and it has been enabled to withstand the action of solvents and even the corrosive action of acids.

pioneer in the glass trade, would often speak of the wonderful glass cameo vase in the British Museum, and as an incentive would offer the youths "a £1,000 for the one that would execute a good copy of it in glass," remarking that Wedgwood's was a faithful artistic imitation, but was wanting in the effect of the original, due of course in a great measure to the material of which it was composed. When Mr. Northwood saw the original he was at once astonished and delighted at the wonderful execution and beautiful effect. He fully realized the truth of Mr. Richardson's remarks, and from that time began experimenting, always with the aim in view of reviving the art of glass cameo, and taking the Portland vase as a standard of excellence. Having by this time established himself in business as a glass decorator, invented that wonderful piece of mechanism, the "etching machine," now so extensively used, and brought to a commercial success the fluoric-acid process, his resources were much widened. The first successful example in cameo was a flint-glass claret-jug for the eminent firm of glass manufacturers, Messrs. Stevens & Williams, in January, 1865. This piece, although on account of the long process of execution a commercial failure, gave him confidence in his work, and is believed to be the first glass cameo produced since the ancients. Shortly afterwards he received a commission from South Kensington Museum for one or two specimens of art workmanship in glass. This was the time when he decided to try and get a colored vase made after the manner of his ideal by one of our manufacturers. For up to this time, owing to physical and manipulative difficulties, a double-cased vase was out of the question. Failing in this he commenced upon a two-handled flint vase, on which he copied a portion of the frieze known as the "Elgin marbles." It was seen in an unfinished state by a Birmingham gentleman, J. B. Stone, who pressed the artist to let him become the purchaser. This done, he presented it to the Birmingham Art Gallery, and gave Mr. Northwood a further commission for a colored vase. In applying to Mr. P. Pargeter, a local glass manufacturer, to make it, he agreed on the condition that a copy of the Portland vase was first executed for him. To this he willingly consented. The opportunity so long wished for was at hand. He relates how on his first visit to the British Museum for the purpose of making notes of the original, after stating his object to the officials, he was looked upon as an ambitious curiosity from the country; but about three years after this he was congratulated all round on his successful copy.

This was followed by further commissions from Mr. Pargeter, Messrs. Stevens & Williams, and Messrs. J. Webb & Sons. For the latter firm he executed the large piece known as the Dennis vase, shown in a partially finished state at the Paris exhibition, 1878, and which is now in the United States.

These works were all carved with the steel point and were high in relief. A demand for 3



of art the point is indispensable. Mr. John Northwood has now been engaged for several years at the well-known works of Messrs. Stevens & Williams, of Stourbridge, where he has developed this class of work to a high state of perfection, and many specimens of their production are now distributed over the most civilized parts of the world.

There is perhaps no question that these beautiful wares can be produced in the United States, it only requiring the importation of skilled labor. In my report on emigration I referred to the means which should, in my opinion, be adopted for attracting to the labor market of America a greater proportion of the skilled artisans who are constantly leaving this district for other spheres where their labor and talents are in demand. I can not help thinking that the old labor law, which for so long a time has been deemed obsolete, but which has of late been revived in the States, has a detrimental effect which seriously affects the development of skilled labor in America by retarding the emigration of many first-class workmen who are persecuted under the laws referred to from entering into any engagement with American employers where a contract or the passage-money has been contracted for in such engagements.—BIRMINGHAM, *April 20, 1888.*

JOS. B. HUGHES,
Consul.

PROPOSED PIPE LINE IN RUSSIA.

The project to connect the Caspian with the Black Sea by a pipe line—to which reference was made in my former report upon the subject of Russian petroleum—seems about to be realized, if the information that reaches this consulate from an ordinarily reliable and trustworthy source is to be credited. This intelligence is to the effect that The Caspian and Black Sea Naphtha Conduit Company has at last been formed, and that the work is to be completed in three years and six months.

The conduit from the small peninsula of Abcheron, on the Caspian, is to have a forked line on the Black Sea, reaching Batoum and Poti. The capacity of the proposed pipe line is to be such as to admit of the passage daily of 240,000 puds—1,200,000 gallons (5 gallons to the pud)—of naphtha. The maximum tariff will be 10 copecks, and the company is to pay to the Government a royalty of half a copeck per pud. The capital of the company is fixed at 14,000,000 roubles, and its property and plant are to pass to the crown after the lapse of sixty years.—BEIRUT, *April 18, 1888.*

ERHARD BISSINGER,

EMIGRATION VIA HAMBURG TO THE UNITED STATES.

The following table shows the number of immigrants landed in the United States from Hamburg (direct and indirect) during the first four months of 1888, as compared with the same period of 1887:

Month.	1887.			1888.		
	Direct.	Indirect.	Total.	Direct.	Indirect.	Total.
January	1,288	808	2,096	1,473	1,205	2,678
February.....	1,643	1,063	2,706	2,909	2,219	5,128
March.....	4,299	1,664	5,963	4,803	2,301	7,104
April.....	4,155	1,401	5,556	9,826	4,157	13,983
Total.....	11,385	4,936	16,321	19,011	9,882	28,893

The above shows an increase over 1887 of about 77 per cent.—HAMBURG, *May 14, 1888.*

WM. W. LANG,

Consul.

EXHIBITION FOR THE PREVENTION OF ACCIDENTS.

In former reports I have called attention to certain laws of the German Empire insuring working people against accidents. To make these laws more effective, and particularly to show practically how accidents may be prevented, the project of an exhibition is near its realization. The exhibition is to take place from April to June, 1889, and the Prussian Government has permitted the gratuitous use of the large exhibition place in Berlin near the Thiergarten and the Lehrte railroad depot for that purpose. The invitation to participate in the exhibition is extended to all nations, and I deem the project of sufficient importance to make it the subject of a report to the Department.

Permit me to give you from circulars and pamphlets before me, and from personal inquiry, a detailed statement regarding the objects and purposes of the exhibition.

I.—THE OBJECTS AND PURPOSES OF THE EXHIBITION.

The articles to be exhibited shall consist of machinery, apparatus of all kinds now in use to guard against accidents, tools, working pieces and working materials in models; in plans, drawings, photographs, and specifications; in copies of regulations, rules for factories, statutes and printed matter relating to accidents and to their prevention, as far as they come under the province of trades and factories defined by the German accident insurance acts (*Unfallversicherungsgesetze des Deutschen Reiches*). All articles that relate generally to the protection of laborers and to the promotion of their welfare and safety at the works insured will be admitted.

As a rule the exhibition of articles in natural size and of models will be prepared. Machines should, as much as possible be exhibited. Since not only

difference only that objects which serve solely for technical purposes, and can not be classed as contrivances for the protection of working people against accidents, are excluded. It is not intended to show merely the efficiency of any machine, but rather the efficiency of the same in connection with devices for the prevention of accidents. The best protective device renders a bad machine not recommendable; but a machine, good in itself, furnished with model equipment for the purpose of preventing, as much as possible, accidents, must in future, considering the burden under the accident laws cast upon the trade associations, of necessity deserve preference over a like good machine, being, however, without satisfactory appliances for protection. The exhibition will, therefore, offer an opportunity particularly to all manufacturers of machines who hitherto have taken a special interest in the question of such perspective measures, or, in future, intend to do so, to introduce their productions to the members of trade associations.

But not only is the exhibition for the participation of manufacturers of machinery and of persons who construct protective devices, but it is also intended to familiarize all parties interested with the character and technical merits of all protective devices in use, and to give them an opportunity to judge of their value and effectiveness. It is therefore considered of great importance that owners of factories and others who use or are to use such protective devices, and not merely manufacturers or constructors of such, should send models, drawings, photographs, and specifications to the exhibition.

Groups 1 to 12 contain detailed suggestions to enable manufacturers and masters to answer for themselves the question how far their participation in the exhibition may be conducive to valuable results.

No one should incline to the idea that any device he has introduced for the protection of laborers is too insignificant to deserve exhibition. The prospectus says: "To this exhibition the motto applies, 'Nothing is of so very little value as not to serve to protect and preserve human life.'"

In the classification of the articles to be exhibited the point of view was taken that many machines, apparatus, etc., are of so general a nature—such as motors, transmitters, elevators, steam boilers—that they and the protective measures to be applied to them might be regarded as a feature common to all works and factories insured. The division into groups provides, therefore, for a department (A, groups 1 to 10) which embraces these interests in common, while an additional department (B, groups 11 to 21) takes into consideration the special interests of single trades. A third department (C, group 22) embraces literature in relation to all these subjects.

The division into groups is as follows:

DEPARTMENT A.

Groups 1 and 2: Prevention of accidents near movable machine parts
 leather wheels, belt-

Group 4: Protective measures on motors.

Group 5: Protective measures in the operation of steam boilers and other apparatus under pressure.

Group 6: Preventive devices against, and safety devices in case of, fire in insured works and workshops.

Group 7: Providing for good illumination and prevention of accidents by means of lighting arrangements.

Group 8: Prevention of accidents caused by poisonous (caustic or corrosive) substances, noxious gases, etc.

Group 9: Personal equipment of laborers.

Group 10: Providence for injured persons.

DEPARTMENT B.

Group 11: Steps for the protection and well-being of working people in the metal industry.

Group 12: Steps for the protection and well-being of working people in the wood industry.

Group 13: Steps for the protection and well-being of working people in the textile industry.

Group 14: Steps for protection in the paper, leather, and polygraphic industries.

Group 15: Protection in the industry of articles of food and consumption.

Group 16: Protection in the chemical-glass industries.

Group 17: Protection in the mining and quarry industries.

Group 18: Protection in building trades.

Groups 19 and 20: Protection in the trades of intercommunication.

Group 21: Protection in the farming and forestry industries.

DEPARTMENT C.

Group 22: Literature (library of the exhibition).

If the division into groups does not precisely define the limits of the prevention of accidents, but considers also the protection of laborers generally and their well-being at works insured, the following reasons may be cited for so doing:

Prevention of accidents and prevention of disease can not be easily separated. The sudden action of poisonous gases produces upon the human organism frequently an injury which is denoted as "accident;" while in case of gradual action of the identical gases in the course of years an injury is caused which is designated as "industrial disease." Yet, doubtless, all that is done towards the prevention of such diseases must be likewise considered as a measure for the prevention of accidents. Thus in some instances the removal of steam and dust must directly be regarded as a measure to prevent accidents, since, as experience teaches in workshops which are filled with dust masses or opaque steams, accidents more frequently happen than in places with pure air and free outlook. But an addition
adduced, 1 1 1

ment danger with a much clearer head than the person whose head is affected by the bad air in which he is compelled to perform his day's work. Nor will the healthy, strong laborer as easily succumb to the consequences of many accidents. From these and other cognate reasons devices for the ventilation of workshops and many other things which, at the first glance, may appear as extraneous and hardly appurtenant to an exhibition for prevention of accidents, have been embodied into this division of groups as subservient to the ends of the exhibition.

Special attention has been bestowed upon the protective measures on movable machine parts, as official statistics compiled for the year 1886 at the imperial insurance office show that, irrespective of the prevalence of various occasions for accidents in the several trades in the entire sphere of "insurance in case of accidents," such accidents as were caused by movable machine parts occupy, among the more severe cases, the first place in number. Not less than one hundred thousand cases of accidents were reported in the year 1886; 10 per cent. of the laborers injured under the insurance laws being entitled to an indemnification.

II. — DIVISION INTO GROUPS. — DEPARTMENT A.

Protective measures in the joint interest of factories and workshops.

GROUP I.

Prevention of accidents near movable machine parts generally; protective devices in transmission shafts, toothed wheels, beltings, etc.

1. Protective devices on shafts: Vertical and horizontal shafts, or "models, drawings, and photographs" of shafts and shaftings, with judicious safety devices for the protection of laborers. Wrapping, sinking, avoiding of projecting wedges and screws in shaft connections (couplings), and in the fixing of machine parts (pulleys, cog-wheels, regulating rings, etc.) on shafts; contrasting of dangerous couplings having projecting parts with couplings provided with wrappings or with novel constructive improvements with a view of preventing accidents.

2. Protective devices near toothed wheels: Toothed-wheel gear in transmitters and motors with expedient wrappings (capsules, railings, protectors of all descriptions), especially having regard to securing a convenient approach to wheels often to be exchanged or lubricated, and to the recovery of lubricating materials scattered about; arrangements by which, owing to a displacement of the wheels, dangers to laborers are, from the very outset, prevented.

3. Protective devices near beltings: Pulleys, if in relation to the purpose of preventing accidents, avoiding of defects in the edge of sheave flanges composed of two or more parts; solid sheaves, sheaves of wrought iron, (2 // points) without projecting

flanges or central collars; iron cams alongside the pulleys; use of tension rollers; application of belts not tensible in moist rooms, etc.; devices near beltings for the prevention of dangerous contact, and for the protection against flapping, off-falling, or tearing belts (surrounding guards, protective casings, catchers, etc.); devices for the reception of belts shifted off, and for throwing on and off of belts, belt hoops, forks, supporters; poles with fingers; strap-arbors and strap-supporters co-operating, and mechanical strap-shifters of every description.

4. The like points of view (1-3) applied to axle-trees and machine spindles; to rack-gears; to cord-chain or strap-wheel work; to fly-wheels and rotatory, oscillating, and shifting-machine parts.

GROUP II.

Disengaging, braking, and lubricating devices, etc.

1. Disengaging and braking devices: Loose pulleys (idle pulleys) and disengaging forks for transmitters and motors; friction devices for motors and separable couplings (especially new systems of friction and centrifugal couplings); devices for the guarding against automatic throw-into gear; loose pulleys having a diameter smaller than the pulley; singling out of loose pulleys (application of particularly durable casings, etc.); securing of strap-forks and of lifter-levers on couplings by means of screws or notches, pins, hooks, springs; combination of disengaging gears with braking devices; arrangements which, in case of danger (for instance, if the hands are caught by roller-pairs), allow the laborer to throw out of gear without the use of hands (foot-boards, cords drawn); arrangements which admit of stopping larger motors or of transmissions from different places and remote points.

2. Lubricating devices: Improved oil caps, which, owing to their arrangement, prevent the shedding of lubricating material, and thus the floor from getting slippery, and otherwise contributing to lessen the danger for the laborer; application of poles for safely reaching high bearings, etc. Automatic lubricating devices of every description for liquid and consistent lubricating materials for use in stationary and oscillating bearings, loose pulleys, etc. Self-lubricating brushes and brasses.

3. Pole brushes and similar implements for the diminution of danger in greasing toothed wheels, in giving strap grease, in cleaning (rubbing with emery) shafts, couplings, pulleys, rollers, and other movable machine parts.

4. Ladders, with special devices (for instance, at the top with hooks or at the bottom with points and rubber covers), foot-planks, foot-boards, hand-dles, and other appliances and devices which, by establishing a fixed stand, diminish the danger for the laborer when greasing, cleaning, and performing other work near transmission shafts and other movable machine parts.

5. Directions for transmission helpers and for the performance of work near machines.

6. Exhibition of entire sets of transmission establishments with model equipment, with a view of preventing accidents.

GROUP III.

Protective measures in the working of elevators, derricks, cranes, and lifters.

Safety casings for approaches to elevators and lifters; self-acting shutters; basket roofs for protection against falling bodies; devices for securing (holding in place) the raising-box in loading and unloading.

Driving, stopping, and breaking devices; catching devices; signal systems for indicating the motion of the elevator; signal boards and boards of warning; work instructions; hydraulic and pneumatic lifters; elevators; cranes of all sorts; safety cranks and windlasses, winches, safety chains, cords, and belts; exhibition of entire sets of elevator arrangements.

GROUP IV.

Protective measures near motors.

1. Steam-engines: Safety casing of the fly-wheel, of the cranks, of through-going piston-rods in horizontal cylinders, in conical-wheel gear in governors, of governors themselves in case of a low location of the governor-balls, of the main strap or main tooth-wheel gear, of the connection of shafts in double or co-operative machines, of projecting shaft heads, and other movable parts.

Devices for dangerless reaching of high placed parts of the machine, foot-planks, boards, etc.; self-acting lubricating devices in crank-pins or wrists, cross-head bearings, eccentrics.

Devices for a dangerless starting of fly-wheels, lever devices, clincher work, friction impetus, as well as for braking and a secure holding in place when repairs are to be made. Communications on the bursting of fly-wheels; protective constructions, and directions for use on the subject.

Cut-off valves which admit of a reliable and immediate stopping of the machine.

Signal systems for the purpose of communication between steam-engine and working rooms and *vice versa* when starting the machine and in case of motor accidents.

Devices for the direct stopping of the steam-engine at any time from the working room; simple wire drafts, application of electric or pneumatic devices.

Instructions for steam-engine helpers; schools for training machinists.

Exhibition of entire steam-motor constructions, which, considering the machine-room, and the details of equip-

GROUP V.

Protective measures in the operation of steam boilers and other apparatus under pressure.

Steam boilers and generators; articles of equipment for safety: Water-gauges; protective casings for water-gauge glasses; devices for automatic cutting off of steam and water in case of break of glasses; manometers; safety valves; automatic feeding devices; automatic apparatus, with signal and alarm devices, to indicate too low water level, too high a steam tension, and the like; devices for cleaning feeding water; packing of steam conduits; measures for a safe cutting off of neighboring boilers from each other, and other measures of precaution in the cleaning of boilers.

Formation of pan scales in boilers; parts of exploded boilers; materials for constructing boilers and testing of same; boiler systems; constructive system of boiler-houses; boiler inspection matters; instruction of service for boiler helpers; firemen schools; exhibition of entire boiler construction, with model equipment.

Steaming, boiling, and dyeing apparatus, and other apparatus under pressure of steam, gases, air, and liquids of more than one atmosphere; articles of equipment for safety; pressure, diminishing, rarefying valves, etc.; inspection matters.

GROUP VI.

Preventive devices against, and saving means in case of, fire in works insured.

1. Fire-proof building constructions generally, construction and material of partition walls and ceilings, roofing, fire-escape doors, etc.

Safe storage of supplies and waste; measures against spontaneous ignition of materials; incombustible curtains for the prevention of the spreading of fire generally at working places; fire-proof impregnation of wooden parts, stuffs, and working implements; asbestos and its application for fire-proof devices; measures of precaution for heating; apparatus for dangerless boiling of varnish, pitch, and other easily inflammable matters.

Spark catcher; lightning-rod constructions.

2. Apparatus indicating too high temperatures in drying-rooms and the outbreak of fire.

Automatic quenching devices; hydrants; system of pipe conduits; use of boiler steam for quenching; use of existing driving gears for the operation of quenching apparatus; water reservoirs; quenching tubs; hand, steam, gas fire-engines; extinguishers; quenching bombs.

3. Fixed and movable saving or escape ladders, escape nets, clothes, hose, cords.

GROUP VII.

Providing for good lighting and prevention of accidents from lighting devices.

Apparatus and articles of all kinds which serve for lighting closed working spaces, and of working places in the open air; lamps, lanterns, etc.

Devices for lighting from outside spaces presenting danger of fire and explosion; safety lamps and lanterns; safety fire-lighters; electric gas-lighters; use of phosphorescent colors.

Safety receptacles for working establishments for the reception of larger supplies of petroleum and burning oil; apparatus for dangerless and cleanly taking small quantities of oil out of the receptacles (retail distribution for daily demand).

Devices for dangerless self-manufacture of lighting gas (from coal oil and waste); electric lighting constructions for works, especially with a view of utilizing existing working forces; organization of the lighting system and works; provisions (rules) as to filling, lighting, and extinguishing of oil lamps; as to the management of gas conductors; as to the procedure in case of imminent gas explosion; as to the attendance of electric-lighting machines and conductors.

GROUP VIII.

Prevention of accidents from poisonous and corrosive substances from noxious gases, etc.

Apparatus for safe storage of poisonous and corrosive substances used at works; litters and hand-cars for dangerless moving of vessels containing acids; devices for dangerless taking of smaller quantities of acids out of vessels and receptacles.

Devices to prevent a rise of poisonous fumes at the openings of charging furnaces and apparatus; closures of retorts and the like; mechanical devices by which noxious substances are destroyed instead of being absorbed by working men; communications as to the use of non-injurious materials instead of poisonous raw materials and products, or of such as are detrimental to health.

Ventilators, exhausters, and exhausting arrangements generally for the absorption of poisonous or injurious gases and for the freeing of working rooms from dust masses and steam.

Devices of every description for airing and heating work-rooms; devices for moistening and cooling the air in work-shops; apparatus for the examination of the working air in relation to any gases, dust, moisture, etc.

Washing, bathing, and privy arrangements for working establishments; articles of equipment for the kitchen; working people's clothing and food.

Protective eye-glasses and masks of every description for protection against pieces of working materials scattered round ; gloves for use in pushing and handling sharp-edged work pieces ; leather aprons and gaiters of leather furnished with iron plate ; shoe coatings and special shoes and boots for like purpose.

Work dresses affording protection against unusual temperatures or wetness ; divers' clothing ; articles of equipment for the handling of glowing masses, hot or corrosive liquids ; use of asbestos, glimmer, etc.

Respirators of every description for protection against dust and gases when at work.

Helmets or cask apparatus with devices for the admittance of fresh air ; equipment of men who, for the saving of persons met by an accident, repair to places filled with fumes, steam, or fatal gases (buildings on fire, canals, pits, wells, etc.).

Detailed communications as to the experiences made especially with the various systems of protective spectacles and respirators at the works insured ; for the elimination of the really useful information from the unavailable.

Devices attached to simple tools for the protection of laborers ; for instance, protective baskets to chisels for catching chips and splints in riveting works ; hilt baskets on blades and on hooks for getting extraneous bodies out of roller pairs, etc.

Improvements in tools of every description with a view of preventing accidents ; for instance, safety guards in fastening hammer handles.

GROUP X.

Providence for injured persons.

Instructions for the first assistance in accidents for the use of the persons employed at the works insured ; suitable material and boxes for dressing wounds ; litters, transportation caskets and cars and the like ; providing for rooms to dress wounds at works and for houses for sick and invalid laborers ; artificial limbs for mutilated persons, and mechanical arrangements for the assistance in lighter works of mutilated persons ; for instance, clock movements which make an artificial arm automatically to perform certain work.

Information as to the occupation of invalid laborers.

DEPARTMENT B.

Protective measures, chiefly of interest for several trades or groups of trades.

Here the following points of view must be considered: Motors of the several trades, or models, drawings, and photographs of motors, with model equipment ; surrounding guards of movable parts ; expedient disengaging and lubricating devices ; devices against the out-springing of rotary tools ; devices (near machines) for the protection of laborers against scattered pieces splinters

work in the place of laborers; for instance, automatic introduction of stuffs and materials into stamping, kneading, pulping, and rolling works; substitution of hand work near lixiviating vats by automatic stirring and scooping works, etc., with or without protective devices; apparatus under pressure and other apparatus peculiar to the several trades with model equipments, with a view of preventing accidents and of protecting laborers; protective measures near or on furnaces, stoves, or hearths; on basins and deepings; against falling bodies; in the treatment of explosive, inflammable, corrosive substances, and other preventive measures of every description for the protection of life and health of laborers, according to the peculiarity of the several trades; instructions of service in relation thereto; notices of warning, directions; representation of entire working establishments or departments of whole standard establishments (models, plans, photographs, specifications); situation, construction (building, material, style); judicious total disposition of the working places and working arrangements with a view of preventing accidents; location of boiler-shops; mounting of motors, transmitters; grouping of motors and working apparatus; location of staircases, lifting and raising apparatus, the storing-rooms and magazines, the railways, junction rails, water canals, etc.; lighting, heating, airing; charity and humane arrangements for laborers; designs of model establishments for the several trades; collective exhibitions—all of which is to apply to the subsequent groups:

Group 11: Metal industry.

Group 12: Wood industry.

Group 13: Textile industry.

Group 14: Paper, leather, and polygraphic industries.

Group 15: Industry of articles of food and consumption.

Group 16: Chemical-glass and ceramic industries.

Group 17: Mining and quarry industries.

Group 18: Building trades.

Group 19: Trades of intercommunication on land. 1. Arrangements for the increase of the safety in loading and unloading, as well as in storing, heavy goods—bales, barrels, casks, round wood, rails, stone blocks, etc.; devices for a safe fastening (cording, etc.) of lowries and trucks when lightly loaded; improvements in transportation, vehicles, and harness; efficient braking and stopping appliances ready for use at any time; improved treadles and catch-handles; judicious lighting appliances; safety-reins; appliances for quickly disengaging bolting horses from carriages. 2. Prevention of accidents of insured persons in railroading.

Group 20: Trades of intercommunication on water: Lighting of coasts, river banks, water roads; ship lanterns; signals; examination (fathoming, piloting) of the fair way. Saving systems: Life-boats and rafts, life-buoys,

DEPARTMENT C.

Group 22: Library: Rules and regulations to prevent accidents; tariffs according to the risks connected with each trade association; rogatory sheets for the taxation of trades; forms of accident records and for adjusting claims for indemnification to be filed; provisions of law in regard to service; notices of warning; directions for laborers; instructions of service and reports by the controlling officers; printed matter of every description having relation to accident statistics, insurance, and prevention, to the protection of laborers generally and to the promotion of their well-being.

In sending printed matter intended for exhibition, in the groups 1 to 21, it is requested that an additional copy be sent for the use of the library.

III.—REGULATIONS FOR EXHIBITORS.

1. For exhibition are admitted all articles which are designed to promote the ends of the exhibition (compare sections 1 and 2 of this report). Foreigners are invited to exhibit.

2. Articles to be exhibited must be reported on a special form prepared for that purpose and obtainable from the secretary of the exhibition. The application must be transmitted, in duplicate, at latest by July 1, 1888, to the secretary of the exhibition, Director Max Schlesinger, No. 3 Koch street, Berlin, S. W. Whether such application has been accepted, would-be exhibitors will receive notice as soon as possible after receipt of their application.

3. Exhibitors will pay an admittance fee of 25 marks, and a rent for the space allowed, viz: Per square meter ground surface within the exhibition premises, 20 marks; per square meter wall surface within the exhibition premises, 10 marks; per square meter ground surface within the arches of the city railroad, 15 marks; per square meter wall surface within the arches of the city railroad, 7.50 marks; per square meter ground surface in open air, 10 marks. The fee of admittance is to be remitted with the application to the secretary above named. Of rent for the space in every instance at least the price for 1 square meter must be paid. Payment of space rent has to be made within four weeks after the allowance of same. This applies also to cases in which the grant ensues at the time of the acceptance of the application. Only full square meters are given. In case of articles of exhibition for the library neither a fee of admittance nor space rent will be collected. The same applies to drawings and models, inasmuch as they are exhibited by owners of works who do not make it a business to sell or dispose of such.

The managers and the committee reserve to themselves the right to exclude improper objects, and in this case fees and rents paid will be returned. Applications made after July 1, 1888, will be considered only if any vacant space remains.

The exhibition is to be opened early in April, 1889, and is to continue three or four months.

Objects for the exhibition must be

hibitor. Upon application tables, cases, etc., will be furnished at net cost by the committee. All articles sent to the exhibition must be removed within eight days after the close of the same.

The committee will secure cheap transportation, freight, and custom-house facilities. The result of its endeavors in that direction will be shortly published.

It is further provided that no object exhibited can be removed before the close of the exhibition. Exhibitors may distribute circulars and sell articles, but not remove any unless replaced previously by another article of the same make and character. The committee will see to the insurance of articles, but take no other guaranty. Exhibited articles will be carefully guarded, but all other expenses must be paid by exhibitors. Steam-power will be provided and the price for its use published. Awards for eminent achievements are intended. If an exhibitor wants to be treated as *hors de concours* he should so state in making his application. The admission fee for visiting the exhibition will be fixed by the business committee. Exhibitors enjoy free admittance. Reduced rates of admission to the exhibition, as well as railroad fares, will be made for the benefit of working people. A catalogue will be issued and special terms for the insertion of advertisements in the same will be published.

It is under consideration to publish a complete illustrated report, with a full description of the articles exhibited, after the close of the exhibition. It is of interest to exhibitors therefore to file, in the library of the exhibition, suitable sketches and descriptions of the articles exhibited.

IV.—THE ORIGIN OF THE PROJECT.

The plan to arrange an exhibition of this kind originated with the Institute for Brewing ("Versuchs-und Lehr-Anstalt für Brauer") in Berlin, which, on the occasion of a general meeting in May, 1887, subjected the question of preventing accidents to laborers to a careful discussion. The Malters and Brewers' Association of Berlin accepted approvingly the project, which at once received additional encouragement on the part of the imperial insurance department and the Prussian ministers of instruction and of commerce. The exhibition place was offered gratuitously by the Government to the committee constituted; and the press as well as philanthropists directed attention to the project as being particularly appropriate at a time when social-political legislation claimed general attention. A committee, consisting of ten members, was formed, and a guaranty fund of 100,000 marks subscribed. Any surplus produced by the exhibition is to be given to purposes of public good; for instance, for a "permanent exhibition of articles for the prevention of accidents" and for the erection of a hygienic museum.

formed, its honorary chairman being Mr. Bödiker, president of the imperial insurance office. The members of this committee are prominent manufacturers, owners of industrial works, mines, etc., and scientists.

The business and finance committee consists of Mr. O. Bischoff, brewer, Danzig; Professor Dr. Delbrück, scientific director of the Berlin brewing school; Mr. Ephraimsohn, brewer, Berlin; Richard Roericke, member of the imperial insurance office, Berlin, chairman; Max Schlesinger, secretary of the committee, and others.

The board of directors consists of Richard Roericke, president, 55 Wilhelm street, Berlin; B. Knoblauch, vice-president, 11-13 Landsberger Allee; M. Happoldt, treasurer, 32-39 Hasenhaide, Berlin; Max Schlesinger, secretary, 3 Koch street, Berlin. Commissioner of the imperial insurance office, Mr. Reichel, imperial councilor of Government.

Besides these bodies officiates a board of delegates chosen by the members of the honorary committee. To this board of delegates, and to the board of directors, is intrusted the joint settlement of technical and formal questions in respect of this exhibition.

VI. — SPECIAL BOARDS OF COMMISSIONERS.

Special boards of commissioners, upon whom is incumbent the settlement of affairs touching the several groups, have also been appointed, with the following chairmen, viz:

1. Groups I, II, and III: E. Becker, 100 Chaussee street, Berlin, N.
2. Groups IV and V: E. Kaselowsky, 18 Chaussee street, Berlin, N.
3. Groups VI and VII: Rudolph Cuno, 113 Potsdamer street, Berlin, W.
4. Groups VIII, IX, and X: P. Heckmann, 9 Goerlitzer Ufer, Berlin, S. O.
5. Group XI: C. Richter, 66 Wilhelm street, Berlin, W.
6. Group XII: Ferd. Alb. Vogts, 43 Französische street, Berlin W.
7. Group XIII: Max Weigert, 4a Carlsbad, Berlin, W.
8. Group XIV: W. Hagelberg, 19-21 Marien street, Berlin, N. W.
9. Group XV: Wilhelm Hahne, 11 Köthener street, Berlin, W.
10. Group XVI: Dr. Hugo Kunheim, 23 Linden street, Berlin, S. W.
11. Group XVII: Mr. Hilt, 85a Königgrätzer street, Berlin, S. W.
12. Group XVIII: Bernhard Felisch, 14 Schaefer street, Berlin, S. O.
13. Group XIX: Von Kühlwein, 18 Friedr. Wilhelm street, Berlin, W.
14. Group XX: Rothanbücher, 7 Artillerie street, Berlin, W.
15. Group XXI: A. Kiepert, Marienfelde, near Berlin.
16. Group XXII: Max Schlesinger, 3 Koch street, Berlin, S. W.

All communications must be directed to Max Schlesinger, secretary of the exhibition, 3 Koch street, Berlin.

My report embraces in a synoptical form the objects and purposes of the exhibition, to which I have added such explanations as may convey a clear idea of the enterprise. At the present time, when everywhere great anxiety is manifested to ameliorate the condition of the working people the nearest

In view of the circumstance that the plan has only lately been matured, and full information was not procurable at an earlier date, doubts may arise whether the Berlin exhibition, limiting applications to the 1st of July, 1888, will facilitate the participation of manufacturers in the United States. But it suggests itself that an exhibition of this kind, as proposed to be held in Berlin, has the merit of a practical step towards solving to some extent the problem of social reform and betterment of the condition of the working classes now occupying the minds of so many of our statesmen and political economists. — BERLIN, *May 4, 1888.*

F. RAINE,
Consul-General.

PETROLEUM WELLS AND INDUSTRY OF CANADA.

The oil-producing territory of Canada is situated in the county of Lambton, Ontario, the greatest number of producing wells being in and about the thriving town of Petrolia, at which place the refineries are located. As far as yet developed the paying wells are confined to a belt of land 2 miles in width and 16 miles in length, situated about 16 miles easterly of Port Sarnia, and extending nearly parallel with St. Clair River. The oil territory is divided into two districts, viz, Petrolia and Oil Springs. The annual production of crude oil in Petrolia averages from 350,000 to 450,000 barrels and the production at Oil Springs is placed at 150,000 to 200,000 barrels, making the total annual average production of crude oil 600,000 barrels for the entire region. There are nine refineries in operation at Petrolia, which, in connection with the wells and other works incident to this industry, give employment to about three thousand men, sustaining a population of about eight thousand people.

The total quantity of refined oil for illuminating purposes manufactured annually from the crude will average 250,000 barrels.

The capital invested in the oil business is estimated at \$2,750,000, as follows: Cost of the wells, exclusive of the value of the land, \$1,500,000; cost of engines, derricks, and other machinery to run the wells, \$300,000; storage tanks, \$150,000; 60 miles of pipe line with forcing machinery, \$150,000; cost of the refineries is placed at \$500,000; and the cooper shops, barrels, chemicals, etc., \$250,000.

METHOD OF DRILLING AND WORKING THE WELLS.

The oil producers of Canada have been obliged to develop a high degree of *ingenuity* upon every plan tending to lessen the cost of

was not the case the oil industry, could not be made to pay, as the great majority of wells produce only from 3 to 10 barrels daily.

As the information may possibly reach some of the localities in the Southern and Western States where oil is known to exist in small quantities it may be well to give a short description of the methods and appliances of drilling and working the wells.

The surface or drift earth is bored with a spod-auger to the rock, which ranges from 60 to 150 feet from the surface, and a 10-inch wooden tube driven down to the rock. The rock is then drilled with a 5-inch bore a depth of about 150 feet and iron casing driven down. This casing is intended to shut out the surface water, which, if admitted, would prevent the free secretion of the oil, and would, by coming into contact with sulphur deposits, produce "black water," which is very injurious to the iron tubing of the pumps, and the buoyancy imparted to the tools and cable by the 300 or 400 feet of water is avoided, and the presence of oil discovered at once by the solid tools or escaping gas. The drilling is continued until oil is struck, and the well is then ready for the pump. This is an iron tube $1\frac{1}{2}$ inches in diameter and composed of various lengths, at the end of which is the working barrel resting upon a strainer or perforated iron tube to keep out obstructions. In the working barrel are two valves, one to take in and the other to let out, and the oil passing through the strainer is lifted by the pump to the surface. In early days it was necessary to provide an engine for each well, but now by the improved "jerker" system one engine will drive twenty or thirty pumps, or even more than that number. A wheel or circular horizontal table is connected with the engine by an elbow-joint in such a manner that it is made to perform a quarter revolution and return to its former position. To this wheel is attached a number of "jerkers" or poles, usually made of white ash, 2 inches square, with iron connections, by which power is conveyed to a number of pumps extending over a large area, and working them all simultaneously. By this plan wells that would not otherwise pay running expenses are operated at a profit.

Crude oil is composed of hydrocarbons of different gravities and boiling points. In distillation these hydrocarbons separate and come off seriatim, as follows: (1) Naphtha, which is too inflammable to be used as illuminating oil, and is sold chiefly to paint and rubber manufacturers, although it is also used in other industries; (2) illuminating oil; and (3) the oils too heavy for illuminating purposes. The lightest of the latter is sold to gas works as gas oil. What remains after the paraffine wax is expressed is manufactured into lubricating oil, wool oils, vaseline, hair oils, etc. What remains of the bye product is known as tar or coke and makes an excellent fuel for furnaces. On account of the fact that thus far the refiners have not been able to remove the presence of sulphur and other impurities from Canadian oil, which causes a disagreeable odor when used for illuminating

about 200,000 barrels of oil from the United States are used annually in Canada, retailing at 30 to 35 cents, as against Canadian oil at 15 to 20 cents per gallon. The total quantity of petroleum and products imported to the British North American Possessions from the United States for the year ended June 30, 1887, was 4,958,657 gallons, of value of \$493,512. There are 3,200 oil wells in the districts of Petrolia and Oil Springs, and the total value of the output of petroleum and products in Canada for the year 1887 is estimated at \$2,000,000.

One of the largest refining works in Petrolia is the Imperial Oil Company. The works of this company extend over 45 acres, embracing stills, repair shops, tin works, cooper shops, etc., with eight steam boilers used in driving the machinery. The process of distillation is carried on in two banks or benches, one containing sixteen and the other five stills, the total capacity of which is 8,000 barrels of crude at a run. They have also a paraffine bank of six stills. Their cooper shops are furnished with machinery so that every step in the process, from the cutting of staves out of the block to the completing of the barrels, is taken through the medium of a machine. Their tin works have been fitted with a plant costing \$10,000. The cans are almost entirely 5-gallon measures, and are put up two in a case, for transportation chiefly to the Northwest, British Columbia, and the lower provinces.—PORT SARNIA, ONTARIO.

J. S. FARRAR,
Consul.

TARIFF CHANGES IN GERMANY.

In a recent instruction the Prussian minister of finance has directed the attention of customs officials in the Prussian provinces to the preparations from fats and from mixtures of fats, or from mixtures of fats and oils, imported under the name or description of oleomargarine from the United States into the German Zollverein.

Considering the circumstance that such preparations, under the American act of August 2, 1886, shall bear such name, if they are manufactured from substances similar to butter, or if such preparations are intended to be sold as butter or butter substitutes, shall, under the provisions of the German law, in most cases, not be regarded as oleomargarine in the meaning of No. 26 h. of the German tariff (more or less fluid fat obtained by pressing tallow), but shall come under the conception of margarine, which, according to item 25 f. of same tariff, is subject to a duty of 20 marks per 100 kilograms (being preparations similar to milk butter, of which the contents of fat is not exclusively derived from milk).

The item No. 26 h. of the German tariff reads as follows in translation: "Lard from hogs and geese, and other greases similar to lard, such as oleomargarine (a mixture of tallowy grease with oil), beef marrow, per kilogram, \$2.38, and item No. 25 f. of same tariff, butter, also artificial, 20 marks (\$4.78)." —BERLIN, April 4, 1888.

F. RAINE,

IMPORTS OF LIVE STOCK INTO GREAT BRITAIN.

The following table shows the imports of live stock into Great Britain from foreign countries and from Ireland during the past five years:

Year.	Imports from foreign countries.			Imports from Ireland.		
	Cattle.	Sheep.	Pigs.	Cattle.	Sheep.	Pigs.
1883.....	472,839	1,113,317	38,726	556,867	460,729	461,017
1884.....	424,664	942,688	26,561	715,843	533,285	456,678
1885.....	372,731	752,309	16,494	640,470	629,090	398,564
1886.....	319,538	1,035,548	21,394	717,389	734,213	421,285
1887.....	298,888	978,834	21,976	669,253	548,568	480,920

From the above it is seen that a very large proportion of England's live stock supplies are obtained from Ireland. It is noticeable, too, that while the imports of cattle from foreign countries have been steadily declining, those from Ireland, although variable, have remained large throughout, the total for 1887 being above the totals for 1883 and 1885, but lower than for 1884 and 1886. Imports of sheep and pigs from Ireland are also large.

TRADE OF SOUTH AMERICA.

The unusual and energetic efforts on the part of Spain to recover the trade of her palmy days with South America, as also with the West Indies, Mexico, etc., are attracting great attention here, and are much commented on in mercantile and diplomatic circles. Not less so are the efforts, still more energetic and successful, on the part of Germany to secure her share of the \$700,000,000 of annual commerce (exports and imports) of the twenty "American Indias." In connection with these efforts comes the query, why is the United States, especially so far as South America proper is concerned, so lacking in energy?

Owing to the continuous interest manifested in regard to this matter, as well as to the immense amount of annual commerce, and to the keen competition and rivalry exhibited in diverting this trade to their respective shores by England, France, Germany, Spain, and Italy, and the amounts of money invested by them in the shape of subsidies, bounties, etc., by preserving the same, I have been led to give the subject my earnest study and reflection.

AMOUNT AND NATURE OF THE TRADE.

First. What does this trade amount to annually; in what does it consist, and what nations command it?

It amounts annually (exports and imports) in round numbers to \$700,000,000. The countries south of the United States, consisting of the Empire of Brazil, four European colonies, and fifteen republics, consist of over 40,000,000 people, and have an aggregate area of over 8,500,000 square miles; a population almost equal, and an area double that of the U. S.

of the United States. Their principal products are sugar, coffee, cocoa, fibrous plants, hardwoods, cochineal, dye-stuffs, and immense herds and flocks, furnishing countless hides and quantities of wool, all of which are greatly needed by the United States, and in return for which they should receive the innumerable articles manufactured from cotton, iron, and other hard metals, agricultural and mechanical implements, shoes, hats, watches, and, as they have no factories of their own worth the name, the countless articles formed and fashioned in the United States by the skill and invention peculiar to that country, and also wheat, corn, flour, bacon, tobacco, kerosene, oil, etc.

This commercial reciprocity of trade, made so by the laws of nature, and so much needed between these tropical or quasi-tropical countries of South America, Mexico, and Central America, and the United States should, it seems, flow naturally between the two countries, and be monopolized by the latter. On the contrary, strange to say, the reverse appears; commercial statistics in fact showing that only about one-fifth of the annual trade of these countries (as stated above, \$700,000,000) is controlled by the United States—indeed, of that which is important, the supplied imports to these countries, amounting annually to over \$350,000,000, the United States supplies but little over one-seventh.

The fact as regards the numerous West India Islands, many of them almost within sight of portions of the Union, such as Cuba, Port Rico, the Bahamas, Jamaica, Barbadoes, St. Thomas, Martinique, etc., with an area of over 100,000 square miles and an aggregate population of over four millions, the same statistics demonstrate that, although almost at her doors, the United States furnishes less than a third of the one hundred and twenty millions of annual imports.

IMPORTS IN DETAIL.

Now of what, in detail, does this trade consist, especially the imports? The statistics of Spain alone, since her late effort to increase her trade, as above stated, prove that in many manufactured articles, supplied in this South American commerce, the variety is astounding, the principal (in 1886-'87) being as follows: Agricultural and mechanical implements of all sorts, plows, hoes, reapers, thrashers, rakes, cars, wheels, axes, spades, shovels, etc., going to make up the interminable list of such implements and machines, and also the still more innumerable manufactures of cotton, woolen, and linen goods. Also arms, alcohol, apples, air guns, asbestos, axle grease, asphalt, acids, ash, art supplies, ammonia, buttons, billiard cloths, brass, bottles, butter, blacking, bran, beef, bananas, bells, bitters, brooms, bags, books, bacon, brushes, beans, bellows, bread, burial cases,

clothing, caustic soda, clay, caustic potash, candy-cement, cod sounds, candy, corn, car materials, carbons, corks, canary seed, coloring, cuspadores, cutlery, cocoa, clocks, cattle, cane chairs, cod-fish, canned goods, cucumber seed, crucibles, cheese, chalk, cyclestyles, cigar-maker's boards, and all sorts of carriages, dental engines, druggists' ware, dates, dried fruits, dental instruments, drugs, dried fish, domestics, dry goods, eyeglasses, extract logwood, engines, essential oils, empty shells, emery cloth, enameled duck, electric-light material, fancy cards, fans, flint, feathers, feed, felt, fishing hooks and lines, frames, furniture, fire-arms, flour, feather dusters, fish, figs, fish-plates, fuse, fire crackers, fruit presses, fish oil, furs, files, gas fixtures, grindstone fixtures, guns, glass tubes, glass, glasses, gum senegal, gasoline, grindstones, groceries, glue, garlic, grease, hemp, hectographs, horns, hair, heading harness, handles, household goods, hides, hoops, hay, handcarts, hams, hardware, hats, hops, hose, hoops, igniting tapes, india-rubber, incubators, iron, iron bars, iron tubes, iron manufactures, ice-cream freezers, iron safes, ink, japanned ware, jute, jewelry, lamps and lamp fixtures, etc., leather, leather belting, leather fixings and manufactures, lightning rods, lubricating oil, lathes, lead pencils, leather bags, locomotives, labels, lard, lumber, locomotive springs, linseed oil, lime, machinery, manufactured zinc, matting, minerals, match splints, mats, maizena, mattresses, manufactured wood, marble dust, matches, music, manufactured hair, manufactured tobacco, Mexican silver, machine oil, mince meat, mast hoops, molds, metallic shells, mineral waters, needles, newspapers, notions, nuts, nails, organs, oak, oakum, oil-cake, oats, oatmeal, onions, olive oil, oars, organettes, olives, paper, paper hangings, etc., printing type and material, patent leather, post-office boxes, pop-corn, paraffine oil, porcelain ware, pickles, pianos, pins, pimento, percussion caps, pork, peas, pumps, pumice-stone, pictures, pickled fish, perfumery, pitch, pencils, pepper, potatoes, paint, photographic material, paper, petroleum, plaster, plated ware, rice, resin, raisins, rivets, railroad spikes, refrigerators, resin oil, railroad fixtures, rubber belts, revolvers, railroad cars, shafts, spikes, stove polish, sausages, staples, syringes, saw teeth, smoothing boards, sarsaparilla, soap grease, shot, shell-primers, salves, sand, steel rails, saws, sickles, straw goods, scientific instruments, sponges, spirits turpentine, strawboard, starch, soap, paste, scissors, sewing-machines, snuff, silex, saddlery, specie, scales, sugar, sand-paper, sperm oil, silver ware, shoes, shooks and heads, slates, stationery, shawls, straps, sulphur, sheet iron, twine, tin, tents, tags, tiles, telephones, tongues, tarpaulins, tin-foil, toilet ware, tea, toys, trunks, telegraph material, tools, tallow, trucks, tar, tobacco, tooth-picks, tacks, tinware, thread, tallow scraps, toilet sets, type-writers, valves, velocipedes, vegetables, varnish, vermicelli, vermouthe, wood, wheat, window glass, wood-ware, wood manufactures, whips, wine, wheels, walnut, watches, wheelbarrows, white wood, water-wholes

If the commerce of a third or fourth rate commercial country like Spain discloses such a list of articles, how countless must they be when regard is had to that of England, France, Germany, the United States, etc. ?

TRADE CONDITIONS.

It must be remembered also there is not much need of encouraging the commerce, that in South America there are scarcely any factories, and that the many botanical stuffs, drugs, dyes, minerals, etc., that are shipped therefrom to the United States come back manufactured, and bring a higher price here than in the "States." Quinine, for instance, properly prepared for use in the United States, though indigenous to these countries, sells for from two to three times as much here as there. The same may be said as to wool and hides sent to the Union and returned here in the shape of shoes, harness, carpets, etc. We must not look alone to the articles in their natural state which are produced and exported from one country to another in order to judge correctly of the importance and extent of a reciprocal trade, but to the fact that many of such articles are returned manufactured in such way as to find ready sale in the very land from which they were exported.

It must also be remembered that these countries, many of them at least, are progressing rapidly in population and resources, and, as a consequence thereof, their aggregate annual trade is becoming larger and larger. This trade and its importance is best evidenced by the continuous and energetic efforts to monopolize it by the great commercial nations of the world, and especially by the subsidies and bounties paid by England, France, Germany, Italy, and Spain to get the lion's share thereof.

Of this immense annual trade, aggregating over \$700,000,000 (some experienced writers say from \$955,000,000 to \$1,000,000,000), the United States controls less than one-sixth. And of the aggregate annual imports (\$320,000,000) she furnishes scarcely one-eighth.

The commerce of these countries more in detail is about as follows :

Brazil, \$220,000,000 ; Mexico, \$58,000,000 ; Central American States, \$25,000,000 ; the European colonies, \$33,000,000 ; and the South American Republics (nine in number) \$351,000,000.

The exports (excluding the West Indies) aggregate in round numbers \$450,000,000. Of this Brazil exports about \$120,000,000 ; Chili, \$60,000,000 ; the Argentine Republic, \$70,000,000 ; and Uruguay, \$23,000,000, by far the largest part thereof. The imports amount annually to about \$375,000,000, which are taken by the above-named states about in the ratio with the exports, as above stated. Of the whole imports and exports the United States controls less than a tenth.

about 6.7 per cent. Apply this to Uruguay, for 1884, and the following proportion will be found:

Imports.		Exports.	
England	27.71	England	21.04
France	18.44	France	14.82
Spain.....	9.89	Belgium	15.47
Germany.....	9.56	United States.....	7.21
United States	6.41		

In Chili and Peru the comparison is still less favorable, and when it is considered that even of this beggarly modicum of United States trade almost the whole is carried in foreign bottoms, the comparison becomes mortifying. Take, for instance, the arrivals and departures of steamers and vessels at and from this Republic (Uruguay) in 1883, as follows:

Arrivals and departures of steamers and sailing-vessels, number, 2,227; tons, 2,102,415, of which the principal maritime nations had as below:

Steamers.			Sailing-vessels.		
No.	Tons.		No.	Tons.	
English.....	407	640,704	English	299	204,294
French.....	231	401,867	French.....	23	9,579
German.....	209	287,916	German	87	16,477
Italian.....	90	114,000	Italian.....	233	122,121
United States	1	78	United States	41	23,312

From which it appears that while 407 English, 231 French, 209 German, and 90 Italian steamers displayed their flags in Uruguayan waters during the year, the United States colors floated from but one, and upon examining the maritime statistics for that year, although the arrival of that single steamer appears, its departure does not. And yet in that year the export and import trade between the two countries amounted to \$3,360,795. In 1885, two years later, the trade had almost doubled, the total for that year being \$6,415,698, and still not a single United States steamer appeared. The whole trade, with the exception of an insignificant portion brought in United States sailing-vessels, having found its way in foreign bottoms. A like state of affairs exists in regard to the Argentine Republic, Chili, Bolivia, Peru, Ecuador, and Paraguay.

It is evident that this South American trade is worth having and deserves a serious struggle, and, as above intimated, the best evidence of its value is shown by the continued and energetic efforts on the part of the great maritime powers to control it. It is also evident that the United States, if she will make a serious effort, exhibit half the energy, and invest one-fourth the money that these countries do, can secure the better part thereof. She controlled it, and in her own bottoms, before the war, and can, therefore, control it again.

PAST CONDITIONS.

In 1856 United States vessels conveyed (exports and imports) from and to her ports, in value, \$483,268,271, and carried

vessels conveyed a value of \$1,139,636,971, and United States bottoms, \$227,947,500.

COMPETING FOR THE ARGENTINE TRADE.

England, France, Germany, and Spain have found that trained, intelligent, and energetic consuls are required at every port; that long credit at a small rate of interest is necessary, and that great pains in the packing and dispatching of goods, prompt dealings, reliable exactness in business, a proper catering to the habits and tastes of the purchasers, great energy, and sleepless vigilance, together with commercial treaties with all states, and an abolition, if possible, of all duties upon the raw productions of South America are likewise required. A strict conformity to these requirements has enabled Germany within the past five years to compete successfully, in fact to supersede in many instances, her able and influential rivals in a commerce which, up to that time, they had monopolized, especially England.

The following extract, from "Kuhlow's German Trade Review," will better explain our meaning:

The export of goods in the textile industry to South America, and especially to Brazil, shows a continual expansion. Until a few years ago French and English manufactures predominated in the southern states, but gradually German goods obtained an entrance into the Brazilian market, and now they have so far taken possession of the field that German lines are everywhere preferred and sold. Indeed, the demand for German goods is almost as large in South America as in North, a fact which is not as yet understood at home, since a large portion of the German exports pass through English and French hands.

In all articles which are exported from Germany to South America, only the cheaper qualities sell, France holding the first place in finer qualities. The German trade has not arrived at that stage, at least in the opinion of large importers who carry on the South American business, at which it can attain the business and nicety which the French goods exhibit. The favorable picture which the German export trade presents, in view of the competition that has to be contended with, is a consequence of the great pains taken in the dispatch of goods, then cheapness, the business exactness of German manufacturers, the gauging of the tastes of the consumers, and the energy of Hamburg commission houses and South American importers.

The English consul at Valparaiso says, in substance, that a complaint is made there that English manufacturers do not study the changes in the requirements that the Germans do, hence even of imports into Chili of woollen more than one-half (60 per cent.) come from Germany.

Mr. Bennett, reporting as to the trade of Rio Grande do Sul, Brazil, states substantially that last year the German imports into that large province of woollen goods were five times larger than those of England, and of linens more than twice as much. A like report comes from Santos in regard to

of this German trade, stating among other things the

Since 1881 Germany has more than doubled her trade with Uruguay and Paraguay. In fact her exports from Uruguay, in 1881, amounted to only \$69,826, and in 1884 to \$834,155, an increase of twelvefold in four years.

The reports above alluded to concurred in stating that these successful efforts on the part of Germany are due, principally, to superior energy, superior training for this particular business, superior packing, superior and more regular dispatch, promptness and exactness in business, regularity in business matters, long credit and small interest, small but quick profits, cheapness of goods, fraudulent marks and imitations, catering in a remarkable manner to the tastes of customers, regularly established commercial houses, superiority in commercial education, trading qualifications, and knowledge of foreign languages. In Spain the German ascendancy is still more conspicuous. The British press, generally, deplures this remarkable revolution in trade. The Times, commenting thereupon, closes as follows:

On the whole it appears that the British commercial position in South and Central America is being seriously threatened by German competition, not because German wares are better, but because they are pushed with more energy, judgment, and commercial knowledge.

The journals of France and Spain are also greatly concerned as to this German ascendancy. On the contrary, none of the English, French, German, or Spanish papers seem to have the least fear of any interference with trade or commerce by the United States. Indeed, their articles in this regard are tinged with a mixture of ridicule and pity; almost all of them concluded by stating, in substance, that the United States are not to be dreaded so long as they merely look forward to being able, within a few years, to control the entire Spanish-American trade provided the proper means be adopted, but does not suggest positively what those means are or when the adoption shall be decreed.

“Our enterprising American cousins” are waking up to the great and increasing Spanish-American trade. They are figuring over the facts that nearly all of these countries are Republics; that they are contiguous, on the same hemisphere, and considerably in love with the great, model, mother Republic; the opening of the Panama Canal and Nicaragua route; New Orleans Exposition; international fairs; Centennial of the Constitution; four hundredth anniversary of the discovery of America; invitations to all Spanish-American states to meet in Washington or New York; South American commissions, etc., as if such figuring by some novel Yankee invention in arithmetical rules would transfer this immense commerce to American shores.

The change from wooden to iron and steel ships cut her out of a large part of the carrying trade, which no fiscal regulations or lack of regulations can possibly restore. The Buenos Ayres Standard has the most sensible article that

noise, and doing nothing. * * * It seems to be the opinion of Americans that commercial relations are to be created by a series of resolutions and the visits of an itinerating commission, and that such old-fashioned ways as the investment of capital and the doing of work are not necessary in the case of American enterprise. * * * No one need quarrel with the Americans about this, for they have every right to select the field of their operations. * * * So long as Europe comes here with its millions and Americans come here with itinerating commission, the business supremacy of Europe in this country will be seen.

INTERNATIONAL RAILWAY.

Fortunately the United States is not confined to the ocean in order to recover this immense South American commerce. An international railway would not only control but monopolize it, and in such way as to defy all future competition.

Is it feasible? When I began to study this question, three years ago, I was inclined to regard it as somewhat visionary. A close scrutiny, a more intimate acquaintance with the people and the topography of the country, a constant intercourse and conversation with able and distinguished geologists and topographical engineers here, some of whom have been over the ground more than once, and, above all, the fact that within these three years railroads have been actually built and routes surveyed for at least one-third of the distance between Buenos Ayres and Bogota lead me to believe that the great international highway (railroad) will be completed much sooner than has been anticipated. This, I think, can be clearly demonstrated by a detailed description of the distance and routes between Buenos Ayres and Bogota, or Cartagena, or Panama, and especially of the railways already built and surveyed along the line; and it will, I have little doubt, astonish many to know, as above stated, that within only three years one-third of the whole line has been built, or is under survey and construction; in fact that there are two lines so built and under construction, and concessions granted for at least two more, and these railways, together with shorter ones already in operation in Peru, Ecuador, and Bolivia, with which connections might be easily made, would make the distance between the two cities, Buenos Ayres and Bogota, to be filled up only about 2,000 miles. It is by no means so gigantic an undertaking as the great Pacific road, connecting the Atlantic and Pacific, over 3,000 miles. I allude to this to show how distance, time, obstacles, visionary impediments, sneer, and ridicule vanish before concentrated determination, energy, capital, and skill.

Now, why can not this proposed international railway, one-third, or at least one-fourth shorter than the Pacific, above alluded to, be built, and

Every possible encouragement is and will be given for its construction by the states through which it is to pass, not only in the way of concessions for railway purposes, but by a guaranty of from 5 to 7 per cent. per annum interest on all amounts invested in construction, as also extensive tracts of land on both sides of the road; and, as the line would run through what has been always regarded as the richest auriferous regions of the world, to say nothing of its other mineral and botanical wealth, such tracts of land would, in all probability, prove invaluable.

To assert these facts is a matter of great ease. Let us prove them. I have before me a railroad map of South America, prepared with great care, and at considerable expense, from which the roads already built, as also those in process of construction, etc., between Buenos Ayres and Bogota, can be distinctly traced, the distances ascertained, etc.

I will describe in detail three lines now projected, and in great part constructed, between Buenos Ayres and the Bolivian frontier, a distance of about 1,100 miles, being one-third of the whole line between that city and Bogota. First, the railway from Buenos Ayres to Rosario, 186 miles; Rosario to Cordoba, 246 miles; Cordoba to Tucuman, 341 miles; Tucuman to Jujuy, 220 miles; total, 993 miles. The above is now built and in operation. Then from Jujuy, almost on the Bolivian frontier, to La Paz, the capital of Bolivia, 500 miles; from La Paz to Santa Rosa, Bolivia, built, 220 miles; Santa Rosa to Cuzco, not built, 190 miles; Cuzco to Santa Rosa, Ecuador, not built, 880 miles; Santa Rosa to Hiradot, Colombia, not built, 450 miles; Hiradot to Bogota, built, 140 miles; total, 2,430 miles. This line, it will be seen, gives 993 miles in operation from Buenos Ayres to Jujuy, and 2,430 miles from Jujuy to Bogota, of which 360 miles are already constructed, leaving to be built 2,070 miles. The route heads all the rivers, principally tributaries to the Amazon.

Second. Buenos Ayres to Santa Rosa, Argentine Republic, built, 450 miles; Santa Rosa to Posadas, surveyed and projected, not built, 220 miles; Posadas to Villa Rica, Paraguay, surveyed and projected, not built, 175 miles; Villa Rica to Asuncion, Paraguay, partly built and to be finished by next spring, 175 miles; Asuncion to Sucre, Bolivia, projected and concession granted, 700 miles; Sucre to La Paz, Bolivia, 220 miles; total, 1,940 miles. From La Paz to Bogota, as indicated in the first route, 1,880 miles, of which there are in operation about 910 miles; to this may be added 395 miles between Santa Rosa and Posadas and Posadas and Villa Rica, Paraguay, so surveyed and projected as to be sure to be built within two years and may be assumed to be built; making a total of 2,515 miles.

Third. A route from, at, or near Asuncion, Paraguay, as follows: Along the Pelcomayo River, across the Gran Chaco, from near Asuncion to Salinas, near the Bolivian frontier, 620 miles; Salinas to Potosi, Bolivia, 540 miles.

Potosi to Y. Y.

presumed to be built, in fact the greater part built, 1,020 miles; from which may be reasonably deducted the distance from Buenos Ayres to Ascuncion, 1,020 miles, and from La Paz to Arequipa, built, 480 miles, leaving a total of 3,225 miles.

This latter route has been projected by the great Buenos Ayres railroad kings, the Messrs. Clark, though only to Arequipa, and is called "The South American Railway."

The Buenos Ayres Standard, alluding to this route, says, among other things:

Messrs. Clark's great enterprise, to which we alluded in our last issue, is of continental magnitude, fit to rank beside the Union Pacific Railway of the United States, or the Canadian Pacific, recently completed. Engineering and British capital have done wonders in the last twenty years, and the programme of such triumphs is by no means exhausted. The South American Railway will probably connect Buenos Ayres and Lima before the close of the nineteenth century, although the idea of a transcontinental line 2,000 miles long is so bold an undertaking as to appear bordering on temerity.

When the late Gervais Pesadas, in 1862, proposed a railway to Mendoza, he was considered more or less insane. When the Messrs. Clark went still further and obtained a concession for a line from Buenos Ayres to Valparaiso it was said that no capitalist would entertain such a project, yet the locomotive is now steadily making its way up the Andine slope, and will shortly reach the Inca's Bridge. In like manner, when two haberdashers and a grocer of San Francisco started the construction of a railway to connect that city with New York they had to struggle for a time with much incredulity and even ridicule. The project now before us is comparatively no vaster than a railway to Bahia Blanca or Mendoza seemed a few years ago. It is simply a question of railway iron and cost.

The whole line from Buenos Ayres to Valparaiso will shortly be thrown open to trade. This line, when finished, will revolutionize trade, and divert most of that of the Pacific coast of Chili and Bolivia to Buenos Ayres, instead of around the cape, the distance being much less and the freights much cheaper. It will also greatly facilitate travel, the mail, specie, and valuable packages of merchandise to and from Australia, putting Melbourne and London within a voyage of thirty-seven hours; in fact, connecting the Pacific and Atlantic between Valparaiso and Buenos Ayres, the time required being only forty hours.

This connection and communication has given rise to a fourth international projected route, as follows: Buenos Ayres to San Felipe, in the Argentine Republic (built), 660 miles; San Felipe to Coquimbo (partly built), 250 miles, and from Coquimbo to Lima, 1,320 miles; Lima to Bogota, 1,100 miles; total, 3,330 miles. Of this route—Coquimbo to Bogota—parts have been built, notably the line from Yca to Chaucay, passing Lima, about 300 miles; other short connections, approximating 250 miles—a total of 550 miles; deducting 660 miles already built, there is still to be constructed

A fifth route has just been developed, and a concession granted therefor, called the International Argentine and Bolivian Railway, to run from Buenos Ayres to some point near Corrientes, thence to Oran, near the Bolivian frontier. This route presumes that the railway connections between Buenos Ayres and Corrientes will soon be completed, a distance of about 700 miles; Corrientes to Oran, 465 miles; Oran to Bolivian frontier, 96 miles; Bolivian frontier to La Paz, 550 miles; La Paz to Bogota, 1,880 miles; total, 3,691 miles; deducting 700 miles presumed to be built from Buenos Ayres to Corrientes, and about 365 miles of connections between La Paz and Bogota already built, leaves still to be constructed 2,626 miles.

It will be observed that these five routes have been treated as international routes between Buenos Ayres and Bogota. By this we do not mean to say that they are intended by the projectors as such, but are described because they all tend in that direction, and, as far as they go, will, or might be, a part of that great international highway, thus leaving so much the less to be constructed.

It will also be seen that of the five proposed routes between the two cities there remains to be built as follows: Route from Buenos Ayres via Jujuy and La Paz, 2,070 miles; Buenos Ayres via Asuncion (Paraguay), La Paz, Sucre, etc., 2,515 miles; Buenos Ayres, connecting with the Clark South American Railway near Asuncion, across the Gran Chaco, to Salinas, Sucre, La Paz, etc., 3,225 miles; Buenos Ayres to San Felipe, thence along the Andes to Coquimbo, Lima, etc., 2,120 miles; Buenos Ayres via Corrientes, Oran, La Paz, etc., 2,626 miles. There are other routes projected, for which concessions have been granted, all tending towards Bogota; but the five already described are the principal.

As above stated, every encouragement, both material and moral, will be given to the construction of this international road by the different republics through which it will pass. The material aid, which is the most important, may be approximated by the general rule in this regard adopted by the Argentine Republic and other South American states—that is, a guaranty of from 5 to 7 per cent. per annum on all sums invested in construction, and a most liberal grant of lands along the road.

The line throughout its entire length would pass through countries teeming with the most valuable articles of commerce, such as coffee, cacao, quinine, sugar, mandioca, vanilla, tobacco, botanical, medical, and dye stuffs, and timber and wood of the most valuable sorts. Among the latter may be mentioned the “Quelracho Colorado,” which is heavier than the heaviest coal, and is so little affected by water or atmospheric changes as to be pre-eminently fit for railway sleepers. It is also used for tanning and dyeing, and is quoted in Marseilles and Havre at 130 to 140 francs per ton. Others are the “Urunday,” which is said to never rot and the “Celia” which the South

From time immemorial these countries have been regarded as the land of gold, silver, and other precious metals, and also copper, lead, bismuth, salt, nitrate of soda, magnesia, etc.

The hitherto unexplored regions of Bolivia were supposed to be especially rich in deposits of gold and silver, and recent discoveries show that the fabled land of the followers of Cabot, supposed to be somewhere in Bolivia, where "mighty griffins" watched like "incarnate death" over "caves of gold and diamonds," has not been so grossly exaggerated, but that, stripped of all poetry, immense mines and deposits of the precious metals do exist in that country, though too remote from highway and habitation to be explored or worked.

In the report of the Director of the Mint for 1884, it is stated, upon information from the United States minister to Bolivia, that Chili, Bolivia, and Peru, under advantageous circumstances, would "add 50,000,000 ounces of silver to the world's use annually." "The basin of the Cerro Pasco, in Peru, of two miles in length by one in width, is so prolific of silver that, without going deeper than 280 feet, over \$200,000,000 have been extracted." "Every spade that turns the clod reveals the silver." Indeed, the South American Journal and kindred papers are filled with accounts of the mines and deposits of the precious metals from the Argentine Republic to Colombia; and when it is remembered that few, if any, of these republics have mints, but export their gold to be coined, it can be easily imagined what this would amount to in the way of freight.

The great diamond fields of the world are also along these routes or in proximity thereto.

A correspondent in the South American Journal of October 1, 1887, states that the country "around Angol, Chili, is likely to prove a new El Dorado. I have many nuggets in my possession weighing from 15 to 18 grams. Large nuggets are of course rarer, but by no means scarce. A few weeks ago one of 580 grams was sold to a Concepcion house. The largest found contained over 5 pounds avoirdupois of metal."

Even Colombia, not heretofore regarded as so abundant in these metals as Peru, Bolivia, etc., seems, from recent accounts, to be rich in mines and deposits. Mr. Charles Dunlop, writing in this regard in August last, says, among other things, that "the immense value and extent of the mineral resources of Colombia are not a mere matter of conjecture; their reality has long since been established on the basis of experience. * * * Of all fields for mining enterprise there are few equal to this hitherto little known region."

Independent of gold and silver, diamond and emerald, however, the
this international

This may be approximated by looking at the commerce of the United States since 1790. The net imports of that year were \$22,500,000; 1830, \$75,000,000; 1880, \$740,000,000; exports, 1790, \$20,000,000; 1830, \$60,000,000; 1880, \$745,000,000; showing an increase in fifty years in the foreign commerce of about elevenfold. The comparison will be better, however, by reference to the internal commerce of the United States, as this proposed international road would develop principally the internal trade of South America. Mr. Carnegie says:

The coasting tonnage of the Union alone more than doubles the entire foreign traffic, 34,000,000 as against 16,000,000 tons, while the domestic commerce by rail is reported at 291,000,000 tons, and by steamers, lakes, and rivers at 25,500,000 tons. Thus it appears that our internal commerce, of which so little is heard, is more than twenty times greater than the foreign trade.

And further, on another page, he asserts:

That this internal commerce of the United States exceeds the entire foreign commerce of Great Britain and Ireland, France, Germany, Russia, Holland, France, Austria, and Belgium combined. * * * The Pennsylvania Railroad system alone transports more tonnage than all Britain's merchant ships.

At present there is scarcely any market for this great internal commerce of South America. Most of the traffic of Bolivia, it is said, is carried from 300 to 500 miles by mules, while in Colombia, actually washed by the Pacific and the Caribbean, freights from Bucuramango to the Magdalena River cost \$80 per ton by road and \$82 by river, while the Pennsylvania Railroad is charging less than a cent a ton per mile. Now these South American countries are said to have a population of over 40,000,000, and an area of almost 8,000,000 square miles—a population almost equal to that of the United States, and an area more than double.

What, it is asked, would its internal commerce not amount to stimulated, fostered, and perfected by this international road? Why, by degrees, should it not approach at least the gigantic proportions of that of the United States, 291,000,000 tons by rail alone, as stated by Mr. Carnegie?

THE PRESENT OUTLOOK.

1. Within the last three or four years about one-third of the line has been built, that is, railways with which the international road could connect.

2. Concessions are being annually granted in the different republics through which it would pass for the construction of other railways that might form connecting links.

3. These concessions are generally of the most liberal nature, such as a guaranty of 5, 6, and 7 per cent. per annum upon all sums invested in construction, and also liberal grants of land on both sides of the route, exemption from taxation, importation of all needed railway supplies free of duty, etc. For instance, the late concession granted by Paraguay to General Osborn (ex-United States)

60 meters wide of land shall be delivered for the line, and also full proprietary rights gratis of alternate lots of land on each side of the line, each lot to be of 10 kilometers fronting the line and 20 kilometers in depth; exemption from taxation for forty years after the completion of the line; freedom of employés from military service, etc.

4. The republics along the whole line are anxious for the construction of railways, and are offering concessions so liberal that they must attract capital.

5. The liberality of these concessions is apparent from the fact that they are generally sold by the original concessionaires at greatly advanced prices. As an example of this, the papers state that Dr. Stewart has been offered for his late concession of a railway, from Posadas to Villa Rica, in Paraguay, \$100,000.

6. European capital and immigration are steadily flowing to many of these countries, and will, in all probability, continue to do so.

7. The wish to build the whole line is general, and the feasibility admitted. Indeed, the probability of its construction is occupying the public mind more and more every year.

8. The immense tracts of land granted to the concessionaires have made large fortunes.

9. In some of these republics rival capitalists are striving for these concessions.

Many other reasons might be stated, if necessary, and time and space at our command. Indeed, it is par excellence the age of railways and railway investments, especially in South America. While writing I see it stated in the South American Journal of last month, that a "Registration company" has been formed in London for the construction of a line in Colombia from Santa Marca to Banco, on the Magdalena River, with a capital of £600,000; and also a line, in the same Republic, from Santander to Bucuramango.

There are over twenty railways in operation in the Argentine Republic, and concessions granted for several more. The construction cost of those now in operation is estimated at a little over \$40,000 per mile. Taking this as a fair average, and estimating the international line from Buenos Ayres to Bogota to be 3,600 miles, and deducting the first-class railway already in operation between Buenos Ayres and Jujuy, 993 miles, and which is the most direct route to Bogota, there would be left to be built, without deducting for the other links above referred to in describing this route, 2,610 miles, at a cost of \$40,000 per mile, or \$104,400,000. — MONTEVIDEO, *January 11, 1888.*

JOHN E. BACON.

THE MOSQUITO RESERVATION.

The interest in the development of the banana industry in the reservation manifested by the Government and the people of Nicaragua continues to be displayed not only within the limits of the reserve, but in lands adjacent to it and in the lands on the Atlantic coast in general. Companies have been organized in different parts of the interior, having for their fields of operation lands in the reserve and in lands contiguous to it along the river Escondido, Siquia, Mico, and Great River and its branches.

Every river steamer brings to this port parties, large or small, of individual purchasers of banana lands, and laborers destined to Bluefields, from which port they are distributed along the rivers above named.

This almost constant travel is adding very materially to the receipts of the Nicaraguan Mail Steam Navigation Company, and making business for and increasing the number of the little coasting craft plying between this port and Bluefields.

Two of the commissioners sent by the Government to explore that part of Nicaragua watered by the rivers Coco, Grand, and Escondido have made reports full of interesting descriptions of the existence of the great natural resources which have been for years comparatively unknown to any except a few tribes of Indians and a few whites, who have occupied the lands and led a life free from the restraining influences of any form of government.

The course of these rivers, running generally in a southeasterly direction and emptying into the Caribbean Sea, while not found to be navigable throughout their entire length, present such natural facilities that they could be made serviceable for many miles of transportation between the Atlantic coast and the interior of Nicaragua.

Tracts of land were found which were suitable for the cultivation of coffee, cocoa, bananas, and sugar-cane, and all the fruits which are produced in these countries. Interspersed all through these wilds were found forests of woods which could be successfully economized in manufactures, and, of course, be made profitable articles of export. These lands are in that part of Nicaragua which for years has been described in the histories and on the maps of the country as the uncivilized part of the Republic of Nicaragua.

Commissioner Francisco Ruiz, commencing on the Mico (an affluent of the Escondido, or Bluefields, which at that part and for some miles from its source in the mountains about La Libertad, in the department of Chontales, still retains the ancient name of Mico, a name formerly given to the entire river from its source to the sea), passed down the Siquia, the Rama branch, the Escondido, the Bluefields, to Bluefields City.

From that port he returned to the Nicaraguan Government station at the mouth of the Rama, where he remained apparently still in the service of the Government of Nicaragua.

The making of new plantations, and mahogany cutting along the Rama, Siquia, and Mico will increase the number of the

those rivers. There, I am informed, the Nicaraguan Government intends to make a town and locate a custom-house.

Many of the sea-going fruit steamers that come to Bluefields from New York, Baltimore, Philadelphia, and New Orleans go to the plantations 75 miles up the Rama and Siquia, and the smaller launches ascend the Mico. This has been going on for some time without objection from the authorities of Nicaragua, these vessels usually having permission from the Mosquito authorities. The action of the authorities of the former seems to have been limited to searching for fugitives, usually rubber men or laborers, who were seeking to repudiate their contracts with their employers after having received advances from them. But while, as I have said, the powers of the gobernador were not extensively defined, so far as to be generally known to the scattered public in that locality, it appears that not long ago the gobernador sent letters to the agents and masters of steamers navigating the Rama that such steamers should not land at the Nicaraguan Government station at night, and that before landing at any time the steam whistle should be sounded, so that the proper officials of Nicaragua at that point could board such vessels and examine their cargoes, as a protection against smuggling into Nicaragua. This requirement seems to have been "honored more in the breach than in the observance."

Many of these steamers going up the Rama and Siquia, and the smaller ones going up the Mico, have been in the habit of stopping at the Mosquito Government house on the Rama, and then continuing the voyage up the river; and on returning down the river Rama, landing at the Nicaraguan Government station at the mouth of the Rama, and there delivering all cargo that they had for that side of the river. In some instances these vessels have landed at the Nicaraguan Government station even at night without objection being made thereto. — SAN JUAN DEL NORTE, NICARAGUA.

WM. A. BROWN,
Consul.

AMERICAN SCHOOLS IN SYRIA.

As supplementary to my No. 69, of April 24, last,* in respect to the re-opening of the Syrian schools, I have now the honor to inclose a copy of a dispatch from Consul Bissinger to the consul-general, whereby it appears that all of the twenty-one schools of the Board of Foreign Missions of the Reformed Presbyterian Church, located in the mutossarifiat of Latakia, in the vilayet of Beyrut, have been re-opened, excepting one in Tartous, which, ~~can be re-opened~~ as soon as the missionaries desire to do so. — CON-

TRADE AND INDUSTRIES OF RUSSIA.

In preparing a report upon the economic condition of Russia a due regard should be had to the abnormal and somewhat erratic manner in which statistical information is gathered and dispensed. As new possessions accrue in central Asia the Government is confronted with an area unsurveyed, a population estimated, and a total absence of all information as to the resources of these newly-acquired territories. Again, as in the vast provinces of Siberia, where the Russian population is largely composed of convicts and where territories comprising millions of square miles are inhabited by barbarous and semi-civilized tribes, like the Samoyedes, Yakutes, Koriaks, and Buriats, all attempts to obtain accurate information except of the most rudimentary character must result in failure. Even the figures representing population and area must in many instances approximate the truth. It will therefore be seen that in the following report, which has been carefully prepared from the works issued by the various ministries and bureaus, tables are not for a uniform year, nor do they cover the same territorial areas. In compiling this information the latest authentic issues from the various departments have been consulted, and wherever any province has been added to or eliminated from what is known as Russia in Europe, attention has been called to such changes. The largest part of statistical effort has so far been confined to Russia in Europe, including the Grand Duchy of Finland and the Kingdom of Poland. Perhaps a clearer idea may be obtained by the following table, giving the different great subdivisions of the Russian Empire, their area and population, on the 1st day of January, 1883:

TABLE A.—*Area and population of the Russian Empire.*

Home.	Area.	Population.
	<i>Sq. miles.</i>	
1. { Russia in Europe.....		
1. { Kingdom of Poland.....	1,909,245	78,269,114
2. Grand Duchy of Finland.....	49,722	7,884,100
3. Caucasus	145,909	2,203,358
4. Trans-Caspian Territory.....	184,595	6,654,017
5. Central Asia	215,510	430,000
6. Siberia.....	1,184,518	5,201,946
7. Sea of Aral	4,879,859	4,143,226
8. Caspian Sea.....	26,166	.....
Total	171,611	.....
	8,767,135	104,785,761

Population to the square mile, 11.94.

A glance at the above table reveals the fact that the Russian Empire, compact and contiguous in all its parts, is the largest in the world, the English Empire excepted, and that the

AGRICULTURE.

In common with other European countries Russian agriculture has suffered for a series of years from American and Indian competition. While the exports of grain for the past twelve months have been largely in excess of former years (as will be seen from Table C) this result has been obtained at the expense of the decline in value of the purchasing medium—the “credit ruble” as it is called—or what is the same thing, the high and increasing premium on gold. The latter having advanced while agricultural products have declined, exporters to England, Germany, France, and other countries having a gold standard have been enabled to realize profits upon their cargoes of grain.

From the imperfect reports for the current year 1887 the crops have been on the whole satisfactory. Particularly good results have been realized by the growers of barley owing to its excellent quality. Wheat has suffered in some of the provinces, but it is, nevertheless, a little above an average, while potatoes and oats have been disappointing.

In the report of the minister of finance for the years 1887-'88, Mr. Vischnogradsky says :

To these causes must be joined the abundant crop which God has accorded this year to Russia. This crop has considerably improved the economical situation, especially in the regions producing wheat; the prices of these cereals have been firm, thus assuring remuneration for the labor of the cultivator and a certain profit for the proprietor. Unfortunately the same can not be said for rye and other grains of inferior value, of which the crop, equally abundant, has been accompanied with a fall in prices. It is also necessary to add that in some districts (fortunately small in number and area) the crop has not been satisfactory.

It is to be hoped that this optimistic view of the minister may be true, but the annual report of the agricultural bureau of 1886 presents many inherent defects in the system which can only be remedied by a radical change extending through a series of years. It will take years to eliminate the evil conditions so antagonistic to this industry or to remove a moiety of the harassing difficulties which hamper the producers.

Conservatism, or an aversion to change, is inherent in all men who till the soil, and the Russian peasant proprietor is in no way different in this respect from his fellow producer in other lands, save that in him this element of character is accentuated until it becomes grotesque in his aversion to the adoption of new methods and machinery. In commenting upon the report alluded to the minister says :

According to the annual report of the agricultural department which we have just received, the crop of cereals in 1886 has been more or less satisfactory. The rye crop has been less than that of 1885, and that of winter wheat has been very small, the cultivation of which
Cereals—wheat and oats have given very good results. The crops of

TABLE B.—*Crop in millions of bushels.*

Articles.	1886.	1885.	1884.
Rye.....	665,244	709,908	691,464
Winter wheat.....	40,134	78,240	78,636
Spring wheat.....	121,464	101,004	190,236
Barley	134,892	101,046	134,088
Wheat (Locar).....	10,860	8,418	11,880
Indian corn.....	21,270	17,364	16,230
Buckwheat	80,280	43,728	69,792
Millet	64,566	24,096	46,926
Pease.....	19,236	10,962	15,558
Oats.....	572,922	391,494	504,690

Comparing the crops of 1858-'86 that of last year shows a decrease of 9,092,390 bushels on the winter grain crops (total, 705,981,510 bushels) and an increase of 84,542,772 bushels on the spring grain crops.

The potato crop has exceeded by 6,372,810 bushels the average (total, 126,114,810 bushels), but the quality was much inferior.

Examining further we perceive how much the relative abundance of the crop of 1886 has contributed to improve the situation of our rural economy. The report proves that our agriculture has been submitted to new losses through the low prices obtained for grain and the exchange value of the ruble. The principal reason for the precarious position of our rural economy is the refusal of our farmers to follow the paths of improvement adopted by their competitors across the sea.

The latter have the advantage of being able to transport their products much cheaper than we can and of being always correctly informed not only of the anticipated yield of the crops in other countries, but also of the prices, the stocks, and tendency of the European markets.

Being always well informed and not having mortgage charges to support, the American farmer is in a condition to resist more or less the maneuvers of speculation, and can form an idea as to the kind of grain of which the culture should be increased or diminished. With us the situation is very different; not only are the rates of transportation on our railways much higher than those of America (averaging 50 per cent. more), but our farmers are deeply in debt and are at the mercy of all kind of intermediary agents whose honesty is not of a very high standard. With regard to this, the singular fact appears that last year, at such an important market as Kharkov, the farmers were not informed as to the prices-current of grain, so that oats of the same quality were sold simultaneously at 35 cents and 17½ cents the pood of 36 pounds. Further, instead of upholding our commerce in cereals with foreign markets, our exporters continue to compromise their reputation. A great number of merchants in London and other sea-port markets complained in 1886 that the cargoes of cereals and flax coming from Russia contained an abundance of heterogeneous matter.

While the inconvenience arising from the high rates of freight can be removed, our rural economy can not reckon on any present increase in its exports, for besides the competition of the United States, of India, and of the other grain-producing countries, we have to undergo a heavy loss from the increase in customs duties in the principal countries to which we export. These measures have already produced their effect in France, the importation of grain of this country having decreased from 857,000,000 of francs in 1879 to 224,200,000 of francs in 1886. Notwithstanding the new opening found through Switzerland to Genoa by the St. Gothard line, our exports of grain for Italy will not fail to be

We do not foresee any improvement for the price of grain, and we attribute the increase in our exports simply to the depreciation of our paper currency, by which in the end our agriculture can not profit.

The vintage of 1886 has been more or less of an average. The total quantity of the crop is not indicated, but in the Crimea a deciatine of land ($2\frac{1}{6}$ acres) has produced from 380 to 515 gallons of wine and in Bessarabia the produce varies from 7,200 to 11,800 pounds of grapes per deciatine. While the crop has been more abundant than in 1885, the price of wine has slightly advanced.

On various occasions the agricultural department has drawn the attention of our farmers to the urgent necessity of extending and perfecting raising of cattle in Russia. Our rural economy as well as the commerce in grain would reap incontestable profits by it, for by reducing to a certain extent the area of the fields cultivated, we would be able to raise the prices of the products. On the other hand the development of the raising of cattle would increase the fertility of the soil by supplying it with manure, and would contribute to the increase in our exports. Certainly some sacrifices are necessary, but is it not so in every enterprise?

Dr. Scherzer estimates the annual production of meat in Russia at 4,315,140,000 pounds, and the consumption at 1,252,800,000 pounds. The correctness of these figures is naturally somewhat uncertain, but it is a fact no one can contest that in Russia the production of meat exceeds the consumption, while Great Britain, France, Germany, Belgium, and Holland import from other countries the quantity of meat necessary to meet the needs of their consumers. The principal countries which supply this deficit are Italy, Austria and Hungary, the United States, and Canada. Attempts have been made lately in Denmark to export cattle and fresh meat to London and have succeeded admirably, but with some small sacrifices in the beginning.

In order to extend our commerce in meat and cattle with foreign markets, it is necessary first to redouble our energy in the struggle against epizooty so that this should disappear. One can judge of the ravages of this disease in our rural economy from the losses endured in the province of Samara, where epizooty formerly carried away annually an average of 87,416 head of cattle, amounting in value to at least \$875,000.

Since 1885 measures of precaution have been taken nearly everywhere and the obligatory slaughter of cattle attacked by epizooty has given very satisfactory results. Thus, in the province of Samara, out of 267 localities infected in 1885 there only remained 12 localities in 1886. In the government of Moscow there were in 1875-'82 an average of 134 localities infected, with an annual loss of 4,573 head of cattle. On the application of measures of precaution the number of localities infected in this country fell to 22, and the annual loss of cattle to 843 head.

Professor Semmer estimates that since the year 1700 Russia has lost by epizooty 54,000,000 head of cattle, representing a capital of \$905,000,000.

The precarious situation and ignorance of our small farmers is one of the causes of the existence of epizooty. Living from hand to mouth, the peasant is very careless about giving his cattle proper food. In fact he only raises cattle for his own personal requirements and sells them at any price whenever a bad crop prevents him from providing for them during the winter. Besides, our railways are lacking considerably in all that concerns the transport of cattle. It happens often enough that cattle which are destined for our capital remain two or three days in wagons without water, and they arrive at the slaughter-houses either exhausted or sick. It is certainly not under such conditions that we may dream of the proper development of our meat exports.

The report does not contain any detailed information on the production of wool. Still it is to be supposed that it would suffice to satisfy the consumption if our textile industries follow the path of progress marked out by their competitors abroad. For an im-

great advantages over similar foreign industries in that labor is vastly cheaper with us than with them.

Last year has been generally favorable to our production of butter and cheese. The manufacturers of butter complain of the competition of oleomargarine, known as "French butter," which has not only filled our large towns but also the country markets. It is well to say on this subject that the Government has decided to take steps in order to repress this fraud. However that may be, our natural butter lacks much, both as to quality and price. If the farmers succeed in perfecting its manufacture the exportation of this article could be very much extended. Up to now the export of Russian butter is principally destined to England, but it is little appreciated abroad. The same may be said of our cheese. The prices of butter in 1886 varied between 21 cents to 48 cents per pound, and that of cheese from 11 to 22 cents per pound.

The silk husbandry gave in 1886 results more or less satisfactory. The produce has been 4,998,600 pounds of silk, of which 3,679,200 pounds were from Toorkistan, 1,317,600 pounds from the Trans-Caucasus and 1,800 pounds from the southern provinces.

As to the tobacco plantations in 1886, they were 176,623 in (including 4,690 in western Siberia) and 13,723 plantations in the Trans-Caucasus, with a total area of 149,129 acres against 137,049 acres in 1885. The tobacco has given a total crop of 122,918,400 pounds, making an average of about 824½ pounds per acre.

The area under beet roots in 1886 was 737,321 acres, 66,619 acres less than in 1885. The crop amounted to 1,028,507,228 pounds of beet-root sugar, against 1,174,900,548 pounds in 1885, or about 1,396⅓ pounds per acre.

Wages have not undergone any noticeable change. That of the workman with a horse varied from 50 cents to 65 cents per day (without food); the day laborer received an average of from 30 to 35 cents.

It is almost useless to comment upon the above report, emanating from the highest authority. Agriculture and all rural economy was at a low stage in Russia, owing to a lack of any kind of knowledge save of the rudest description. The condition of the mujiks or peasants is very much akin to that of the liberated slaves in America some ten years ago, and until education is more generally diffused among them it is almost hopeless to expect any marked improvements. If the large landed proprietors would only set an example of scientific farming, using judiciously the fertilizers adapted to the soil, and employing the best labor-saving machinery and agricultural implements, the small peasant farmers seeing the result would be induced in time to follow; but the latter have been too long in a state of tutelage and dependency to realize that they must take any initiative move. To the next generation—the children of the freed serfs—Russia must look for that recuperative energy which is the outcome of education. The present generation will always work under the memory of that burden of bondage which they bore in their youth. So they farm in a half-dazed fashion, scratching the ground with a half starved animal, with what, to an American farmer, would be a rude plow, giving the land no proper nutriment, cultivating their crops imperfectly, reaping their scanty harvests, content to make both ends meet, and to be ready for the tax-gatherer when he comes on his never-failing mission. And yet what possibilities there are to intelligent farming in some parts of the Empire.

In addition to the fertile provinces in Russia is the

and middle Siberia, capable of producing an unlimited quantity of wheat, barley, rye, oats, and other cereals, and of supplying an enormous number of horses and cattle. Along the banks of the Obi, Yenessei, and Lena, and for hundreds of square miles between them the land is a garden spot, the soil consisting of a rich, black earth. So exclusively is it of this character that it is almost impossible for a geologist to pick up a few specimen pebbles. It is virgin soil, and is as rich as the delta of the Nile. Owing to lack of transportation the prices of land, grain, meat, and labor are ridiculously low. Complaints are made that everything has risen in value in these provinces during the past few years; still one can buy land from the Government at from 50 cents per acre and purchase meat at 4 cents per pound, while rye flour commands only \$1 per 100 pounds. Ten years ago the price of meat on the Obi was 1 cent per pound. If the Government would only expend some of its subventions in opening the Yaman Canal from the Gulf of Obi, and in building railroads into these provinces so rich in soil, in mineral wealth, and in the product of fisheries, the Russian budget would show a surplus and the Government would have no reason to face reluctant foreign bankers nor draw its drafts upon posterity. At present there is but one hope for the development of agriculture in these rich fields, and that of the faintest description. Captain Wiggins and Professor Nordenskjöld have demonstrated the feasibility of entering the Obi and Yenessei by steamer through the Kara Sea for a limited time during the summer, but the navigation is too perilous, too uncertain to tempt capital to invest in this garden of Russia.*

The only outlet for these immense products would be along the shores of the frozen ocean and past the tortuous and shifting currents of Nova Zembla.

When Russia has settled her political and military problems she will doubtless devote herself to the new far-seeing economic helps of education and the development of her immense natural resources. Until then she must remain in bondage to foreign creditors, and Government and people must face an annual recurring deficit. Every disease has its cure; but experience alone can teach statesmen as well as individuals how to find the true remedy.

During the year 1886-'87 the 229 sugar refineries of Russia produced 176,403,492 pounds of loaf sugar, 814,711,212 pounds of light sugar, 1,810,476 pounds of dark sugar, and 118,376 gallons of molasses.

There has been an immense increase in the export of grain for the year ending December 31, 1887, as will be seen from the following statement:

TABLE C.—*Statement of exports of grain from Russia from January 1, 1887, to January 1, 1888, as compared with 1886 (in bushels).*

	1886.	1887.
Reval.....	11,208,702	4,116,390
Riga.....	16,820,388	6,373,944
Libau.....	24,982,620	15,229,812
	934,170	658,818

	1886.	1887.
Neschava.....	827,364	1,089,276
Sosnitza.....	2,383,650	2,137,098
Alenandrovsk.....	1,868,766	1,566,672
Radzivolov.....	1,278,504	1,643,166
Volotchiok.....	1,382,136	852,840
Odessa.....	59,598,714	39,813,780
Sevastopol.....	9,522,990	7,114,980
Nikolaiev.....	18,972,114	8,737,992
Berdiansk.....	6,577,980	6,412,758
Taganrog.....	7,306,092	4,659,246
Rostov.....	19,710,450	11,454,960
Poti.....	3,332,886	.....
Batum.....	12,413,856	.....
Baku.....	53,316	.....
Total.....	212,586,690	118,298,754

As remarked above this is due to the great advance in gold as compared with the paper currency, and has been of service to Russia only in allowing her to work off the large surplus remaining on hand after supplying the home demand.

The number of domestic animals in European Russia in 1883 was as follows: Horned cattle, 23,628,031; sheep, common, 37,349,857, high bred, 9,374,879, total sheep, 46,724,736; hogs, 9,361,980; goats, 1,067,137; horses, 17,880,792.

The losses from disease the previous year 1882 were: Horned cattle, 103,246; sheep, hogs, and goats, 13,526; horses, 7,558.

MANUFACTURES.

In this most important industry, the foundation of national wealth, Russia does not occupy the position to which she is entitled by virtue of her vast natural resources, her population, and the fostering care of an abnormally high protective tariff. Despite all that her statesmen have done for this interest by placing enormous duties upon raw materials and manufactured goods, it is to Germany, Austria, France, and other countries that her consumers look for many articles which should be supplied by her own workshops. The cause is perhaps not difficult to determine; but as it enters into the realm of political jurisprudence it is necessarily beyond the purview of a strictly commercial report.

The report issued by the bureau of manufacturing industries in Russia and Poland for 1884-'85 is a very important document, showing careful preparation and analysis; but it has been found necessary to consult a number of other works on the same subject to find all essential information. The names of the owners and the location of the works are given, together with many interesting details, the bulk of which is duly set forth in the following tables under classified indices.

TABLE D.—Statistics of manufactories in Russia in Europe, including Poland, giving the number of workmen and annual output.

Manufactures.	Russia.			Poland.		
	Mills, establishments, etc.	Laborers.	Value of product.	Mills, establishments, etc.	Laborers.	Value of product.
<i>Textile fabrics.</i>						
Wool:						
Wool spinning	68	4,789	\$2,586,509	53	5,703	\$5,922,560
Carpeting ¹	9	802	275,006	2	56	20,500
Felting	41	637	155,000			
Woolen cloth ²	390	48,003	20,384,500	174	3,178	2,129,500
Light woolen and mixed weavings ³	190	19,072	10,562,500	105	7,865	6,548,000
Wool knitting	67	1,487	525,500	28	163	57,500
Cotton:						
Wadding	53	148	427,000			
Cotton spinning ⁴	67	116,494	56,270,000	30	9,751	9,499,000
Cotton weaving ⁵	488	80,425	27,980,000	173	11,864	10,556,500
Tape and braid weaving	53	1,908	898,500	37	1,243	482,000
Flax:						
Flax beating	55	2,705	1,843,500			
Flax spinning ⁶	24	20,780	6,539,000			
Linen ⁷	87	15,481	5,027,000	9	7,810	1,871,500
Silk:						
Silk weaving ⁸	173	12,352	4,460,000	3	106	71,000
Brocades, gold brocades, etc. ⁹	112	2,625	1,340,000			
Ribbon	13	696	302,500	3	227	165,000
Dyeing and printing	590	29,749	27,778,000	38	1,235	1,348,000
Bleaching	68	3,251	984,500	27	1,116	515,500
Rope, hemp spinning, etc. ¹⁰	308	7,099	3,103,500	1	4	3,500
Oil cloth and backing	31	878	713,000	1	9	3,000
Hats	29	739	502,500	11	344	249,000
<i>Paper.</i>						
Paper	140	13,804	7,348,500	27	1,891	559,500
Wall paper	27	1,209	608,000	4	232	95,000
Various manufactures of paper	44	1,817	1,301,000	4	65	24,000
<i>Products from wood.</i>						
Saw mills	438	13,800	6,985,006	160	1,317	997,000
Furniture and joining	96	2,775	1,160,009	24	1,733	503,000
Miscellaneous woodwork	40	891	231,500	8	371	126,500
Wood pulp ¹¹	26	391	301,500			
Cork	10	1,831	852,500			
Matting (common)	70	4,184	274,000			
Tar and turpentine	964	2,612	522,000	67	206	38,500

¹ There are 323 weaving looms in Russia.² Total number of yards produced in Russia, 20,156,888.³ Total number of weaving looms in Russia, 14,500.⁴ Total number of spindles in Russia, 3,200,000; average annual product of yarn, 176,580,000 pounds.⁵ Russia produces 11,595,000 pieces of cloth annually.⁶ Total of flax thread produced in Russia, 45,360,000 pounds; number of spindles in Russia, 185,000.⁷ Russia possesses 7,680 weaving looms.

TABLE D. — *Statistics of manufactories in Russia in Europe, etc.* — Continued.

Manufactures.	Russia.			Poland.		
	Mills, establishments, etc.	Laborers.	Value of product.	Mills, establishments, etc.	Laborers.	Value of product.
<i>Chemical products.</i>						
Chemical and coloring products.....	198	5,423	\$6,441,000	17	327	\$404,000
Saltpeter ¹	18	593	226,500	.....	.....	.....
Potash ²	101	913	165,000	.....	.....	.....
Matches.....	240	8,419	1,243,000	121	212	62,000
Lac and sealing wax.....	32	499	1,251,000	1	2	3,000
Cosmetics.....	21	657	1,356,500	6	112	229,000
<i>Tallow and wax products.</i>						
Tallow and fat working ³	393	3,788	3,613,000	2	5	2,900
Soap ⁴	373	1,504	4,510,000	42	157	393,000
Tallow candles ⁵	332	646	625,000	45	82	73,000
Paraffine and stearine candles ⁶	12	2,280	4,737,000	4	141	371,009
Wax beating and bleaching ⁷	50	341	467,000	.....	.....	.....
Wax candles ⁸	228	1,258	2,627,000	3	174	164,500
<i>Leather and other animal products.</i>						
Leather ⁹	3,129	19,685	19,549,000	389	2,909	3,346,500
Various work from leather.....	32	1,697	801,500	2	23	16,500
Furs and sheep-skins.....	406	2,915	1,353,000	.....	.....	.....
Bone burning.....	48	739	890,500	8	123	102,000
Glue boiling.....	111	905	287,500	3	42	17,500
Bristles, hair, horns, and down.....	50	1,320	591,500	11	555	198,000
<i>Lime, brick, pottery, and glass.</i>						
Lime, cement, and alabaster.....	219	4,047	1,516,500	54	719	289,500
Bricks.....	2,890	28,630	3,712,000	483	4,409	1,010,500
Pottery and Dutch tile for stoves, etc..	205	1,502	311,500	104	358	116,500
Porcelain and crockery.....	42	7,695	1,777,000	8	797	204,500
Glass.....	206	18,776	4,587,500	30	2,143	567,500
Stone cutting and polishing.....	20	567	112,500	11	207	62,000
<i>Machinery and metal products.</i>						
Foundries.....	143	4,036	1,210,000	16	537	210,000
Iron and steel rails.....	41	11,497	7,948,500	5	1,904	2,590,500
Machinery.....	261	41,305	19,575,000	66	4,601	3,460,000
Nails and wire.....	69	3,754	4,396,000	10	728	582,000
Miscellaneous articles of metal.....	254	11,475	3,756,000	53	1,494	798,500
Brass and bronze.....	182	5,820	3,566,500	18	633	284,000
Bells.....	33	329	572,000	1	2	1,500
Arms ¹⁰	13	3,956	1,331,434	.....	.....	.....
Cannon and projectiles ¹⁰	3	4,321	729,234	.....	.....	.....
Agricultural machines ¹⁰	67	5,256	2,696,748	.....	.....	.....

¹ Total amount of saltpeter produced in Russia in Europe, 3,988,800 pounds.² Total amount of potash produced in Russia in Europe, 6,768,000 pounds.³ Of tallow and fat Russia in Europe produces 47,900,000 pounds, and Poland 396,000 pounds, making a total of 48,296,000 pounds.⁴ Russia in Europe produces 89,300,000 pounds of soap.⁵ Russia in Europe produces 8,029,900 pounds of tallow candles.⁶ Russia in Europe produces 31,127,580 pounds of paraffine and stearine candles, and 11,124,000 pounds of oleaine and glycerine.⁷ Russia produces 1,710,000 pounds.⁸ Russia in Europe produces 8,351,388 pounds of wax candles.⁹ Russia in Europe produces.....

TABLE D.—*Statistics of manufactories in Russia in Europe, etc.*—Continued.

Manufactures.	Russia.			Poland.		
	Mills, establishments, etc.	Laborers.	Value of product.	Mills, establishments, etc.	Laborers.	Value of product.
<i>Food products.</i>						
(Russia and Poland combined.)						
Dairy products	325	806	\$385,974			
Fish products.....	236	2,473	326,452			
Chicory products.....	7	152	359,795			
Starch and molasses	1,223	4,593	930,685			
Flour.....	20,663	42,048	43,485,605			
Macaroni and biscuits	66	659	722,158			
Oils (not mineral).....	10,013	23,452	5,618,216			
Malt	173	510	763,489			
Yeast	51		940,400			
Vinegar	350	389	292,003	62	172	57,933
<i>Various products.</i>						
India rubber.....	2	1,727	3,442,500	1	26	\$62,500
Mineral oils, asphalt, etc	46	1,522	2,276,000	5	85	56,500
Powder and nipple caps.....	8	2,146	1,520,500			
Musical instruments.....	30	978	601,500	9	141	70,000
Pencils and slates.....	5	180	59,000			
Equipages.....	124	2,408	907,000	13	281	147,500
All other manufactures.....	2,319	38,512	29,177,926			

Products subject to excise duties.

Products.	Distilleries, breweries, etc.	Laborers.	Amount of production.		Value of product.
			Gallons.	Pounds.	
Alcohol.....	Russia	1,887	36,108	92,379,884	} 1 15,2612,310
	Poland	400	2,747	9,361,656	
Whisky, or vodka	Russia	265	3,851	31,912,542	} 2,467,500
	Poland	54	470		
Beer.....	Russia	1,272	9,608	74,336,292	} 24,108,248
	Poland	463	1,916	22,096,800	
Beet-root sugar ²	Russia	203	78,337	571,567,168	} 43,765,500
	Poland	42	16,223	102,527,748	
Sugar refining.....	Russia	33	13,375		} 2 28,790,959
	Poland	27		121,470,660	
Tobacco.....	Russia	419	28,783	6,331,932	}
	Poland	16	2,806		

¹ Estimated value with excise.² 128 gallons treacle.

This statement, taken without comment, would exhibit a great lack of industrial enterprise for an Empire of 105,000,000 inhabitants; but no report on the manufactures of Russia can be complete until a proper census of the domestic artisans and their products is prepared—a work, I must confess, replete with difficulties. It must be borne in mind, however, that this report deals only with the large establishments scattered through sixty provinces or governments. Very little attention has been paid to what is known as the domestic industries of Russia. The system is peculiar to this Empire, although it has a certain counterpart in French and Swiss industry. There is a large number of skilled workmen not employed in any manufacturing establishment, who at the same time prepare their work at home. Their houses are their workshops; some of them labor at their trades during the winter, when outdoor work is impossible, preferring to visit the cities in search of employment or to till their crops until the rigors of winter drive them to indoor work. The product of these artisans is sold either in the various shops in the cities, is carried to the different fairs, or is peddled out from little stands in the towns, as may seem most expedient. But while the workmanship in many instances is not inferior to that of the great manufactories, and is always good enough for a certain class of consumers, the prices at which these products are sold are so low as to interfere very seriously with the large established factories. It is hoped by the latter that these artisans may be gradually absorbed by them through the increasing demand for skilled labor and this ruinous competition ended; but at present there is little prospect of its being accomplished.* The number of such house artisans is estimated by some writers to be as high as 7,500,000. Giving a value of \$250 only as the average annual product of each workman we have the sum of \$1,500,000,000. But the average value is probably more than the amount named. One authority goes so far as to place the annual value of this product as high as \$7,500,000,000. Whether this guess is near the truth or not one thing is very clear—Russia does not depend upon her established manufactories for her supplies. According to these tables they furnish but a moiety of the manufactured products consumed. It is from her domestic artisans, from the kustar workshops, that her people supply their wants.

Table E furnishes a very interesting statement of the condition of some of the principal manufacturing industries of Russia during the five years 1880 to 1884, and the comparative increase and decrease in their number and products. It is to be regretted that these figures have not been carried out to 1887-'88, but it must be borne in mind that statistics in many departments have not been reduced to that degree of accuracy and promptness which is a marked feature of American, English, and French bureaus. It is to be still more regretted, because the belief prevails among some people that Russia has made material advances during the past three years, both in the conditions which surround her manufacturing

manufacture of cotton, large additions are being made to the number of spindles and weaving looms, and it is but fair to presume that other equally important branches are progressing favorably. The next table issued will be of great value to those who feel an interest in the economic conditions of this colossal Empire, so different in its surroundings from other civilized nations.

TABLE E.—*Comparative statement of some of the principal manufacturing industries in Russia in Europe and in the Kingdom of Poland in 1880 and in 1884.*

Industry in the manufacture of—	1880.			1884.		
	No. of mills.	No. of laborers.	Value of products.	No. of mills.	No. of laborers.	Value of products.
Cotton.....	868	186,880	\$88,102,000	881	222,190	\$106,113,000
Wool.....	1,169	111,570	87,537,000	1,127	93,795	52,749,000
Flax.....	173	33,970	13,751,000	185	46,776	15,045,000
Silk.....	226	13,179	5,738,000	304	16,006	6,324,000
Dyed goods.....	773	34,634	33,320,000	723	35,341	30,626,000
Paper.....	171	13,149	6,303,000	167	15,195	8,308,000
Chemicals.....	686	14,011	7,718,000	647	17,157	11,436,000
Leather.....	3,898	23,367	24,409,000	3,568	22,594	22,395,000
Glass.....	207	14,613	4,154,000	236	20,919	5,155,000
Porcelain.....	59	7,786	1,609,000	50	8,495	1,971,000
Machinery.....	270	48,383	28,203,000	327	45,906	23,030,000
Total.....	8,500	501,541	270,844,000	8,215	544,374	283,152,000

It is evident also that in the products of paper, chemicals, porcelain, and crockery, smaller works must have been absorbed or the larger works have increased their capacity, for with a decrease in the number of works we have an increase both in number of workmen and value of the output, or as a total result, the number of works exhibit a decrease of 285, the number of workmen an increase of 42,832, and the production an increase of \$12,308,000.

If we take 100 as the value of products for 1880 we shall have for 1884 the increase or decrease in each branch:

TABLE F.

In the manufacture of—	1880. Per cent.	1884. Per cent.	Product of each work- man in 1884.	Product of each work- man in 1880.
Cotton.....	100	120	\$477.57	\$471.43
Wool.....	100	91.5	562.38	515.71
Flax.....	100	109.4	321.63	404.79
Silk and trimmings.....	100	110.2	395.09	435.38
Dyed and printed goods.....	100	91.9	866.58	962.06
	100	131.6	546.75	479.35
			466.55	550.85

It is interesting to compare the value of product produced by a workman in 1884 as compared with 1880. Average value of product of each workman : In 1880, \$540 ; 1884, \$520.

MINES IN RUSSIA.

The great mineral wealth of Russia is so well known that comment seems almost superfluous. Seldom has any country been possessed of such advantages. Siberia has been but partially developed and the Caucasus remains almost a virgin field. Despite protecting and ameliorating laws enacted by successive Governments the industry has fallen off in its producing capacity and value of product during the years extending from 1875 to 1884, as will be seen from the tables contained in this report.

The lack of labor, the difficulties of transportation, and the laws which are a clog upon the necessary adjuncts of foreign capital and enterprise weigh heavily upon this great source of wealth, and until these impediments are removed no marked improvement is possible. There is hardly a metal the production of which might not be at least quadrupled and its value utilized in the development of art, commerce, and manufactures, and all that tends to make a country rich and powerful, but the last published report upon the mining interests of Russia does not hold out much encouragement to those who feel that the Empire's financial prosperity lies in the realm of industrial pursuits. A transcontinental railway to the Pacific with subsidiary branches would do even more for the material development of Russia than the completion of our own great highways has accomplished for America. If by such action the practically worthless American desert has been made one of the prime elements contributing the material wealth, what would it not accomplish for Siberia, with her matchless water-ways, her fertile soil, her immense fisheries, and her inexhaustible mines of metals and precious stones? Doubtless this will come in time, but not until all the military and strategic railways have been completed. The policy of the Government seems to subordinate every necessity for economic improvements to military supremacy and to relegate all its industrial possibilities to the remote future.

The following tables will show the condition of the mining interests of the Russian Empire in the year 1884, as well as its present value compared with former years :

Total products of the mines of Russia worked during the year 1884.

	Avoirdupois weight.		Avoirdupois weight.
Gold.....pounds...	78,424	Coal.....tons...	4,318,583
Platina..... " ...	4,932	Naphtha and petroleum products...galls..	103,280,200
Silver..... " ...	21,240	Salt.....tons...	1,125,023
Tin..... " ...	1,389,660	Manganese..... " ...	24,323
Copper.....tons...	6,834	Sulphur..... " ...	830
Zinc..... " ...	4,745	Lead.....	
Cast-iron.....			

Statement giving number of mines, laborers, and product during the year 1884.

Gold mines :

Number of mines*	1,306
Number of acres (area)	1,288,034
Number of workmen	76,465
Number of tons of gold-bearing sand..	21,601,347
Product of gold dust (No. of pounds)..	78,424

Platina :

Number of mines	71
Number of laborers	1,768
Number of tons of ore	351,036
Number of pounds produced	4,932

Silver and tin :

Number of mines	27
Number of laborers	1,649
Number of pounds produced :	
Silver	21,240
Tin	1,389,600
	1,410,840

Copper :

Number of mines	57
Number of tons extracted	165,630
Number of tons of product	6,834
Number of laborers at the mines and works	8,409

Zinc :

Number of mines	8
Number of laborers	406
Number of tons extracted	30,938
Number of tons of ore washed	11,463
Number of tons of pure zinc obtained..	4,745

Lead :

Number of mines	1
Number of laborers	18
Number of tons obtained of pure lead from 38 tons of crude ore which remained from last year	14

Iron mines :

Number of mines in existence	752
Number of laborers	3,203
Number of tons of product	1,115,358

Iron works :

Number of works in existence	290
Number of water-wheels	1,266
Amount of horse-power	27,015
Number of turbine-wheels	182
Amount of horse-power	9,905
Number of steam-engines	826
Amount of horse-power	40,617
Number of movable engines	73
Number of laborers	177,873
Number of cords of wood consumed	3,160,191
Number of bushels of charcoal consumed	1,583,165
Number of tons of coal and coke consumed	474,364

Cast-iron :

Number of works	134
Number of tons produced	559,901

Steel made use of :

Tons of cement steel	1,992
Tons of puddling steel	3,008
Tons of Bessemer steel	112,692
Tons of cast steel	4,169
Tons of Martin steel	75,430

Outturn of steel :

Number of tons of assorted	19,868
Tons of rails	107,975
Tons of sheet	6,702
Tons of miscellaneous	92,893
	227,438

Coal :

Number of pits	172
Number of laborers	27,711
Number of tons produced	4,318,583

Manganese :

Number of mines	86
Number of laborers	149

Tons produced in Russia 20,003

According to the statement made in the report of the minister of domains for the Caucasus district the product in that province was 2,730

In all others 1,590

24,323

Sulphur :

Number of mines	3
Number of laborers	197
Tons of ore extracted	6,003
Tons of pure sulphur produced	830

Naphtha and petroleum :

Number of works	48
Number of laborers	3,573
Gallons of benzine	652,581
Gallons of illuminating oil	87,906,313
Gallons of mineral grease	14,721,303

103,280,200

Equal in number of barrels (of 40 gallons each) 25,820,500

Salt :

Number of mines and works	126
Number of laborers	19,471
Number of tons produced	1,125,023

Porcelain clay :

Number of pits	1
Number of tons obtained	3,600

Ornamental stone cutting and polishing :

Number of works †	2
Number of water-wheels	2
Amount of horse-power	160
Number of turbine-wheels	2
Amount of horse-power	16
Number of laborers	206

Crude petroleum :

Number of firms	65
Number of wells	312
Number of laborers	1,978
in gallons	389,960,772

The outflow of petroleum represents only that portion which is utilized and transported. The lack of tanks and reservoirs or pipe lines causes an immense loss. Some of the proprietors conduct the outflow into simple pits dug in near proximity to the wells, and remove only such quantities as can be transported. There is therefore an almost criminal waste of the material. Other wells are permitted to flow almost uninterruptedly without effort to secure the product. Again, the one line of railway is still incomplete, and the product has of necessity to be handled twice before reaching the port of Batum. Great changes are on foot, and in a very short time we may expect to see the available product quadrupled and the necessary facilities for transport enlarged to equal the demands made upon it. It is reported that new processes have been discovered by which both the quantity and quality of the oil extracted will be very greatly enhanced. When these changes are completed Russia will prove a formidable competitor to America both in Europe and in Asia. It can not be expected that Russian statesmen and economists will permit this industry to remain in its unsatisfactory condition, and before very much time has elapsed we may expect to learn that capital and skill have been found ready to utilize this great source of wealth. Indeed it has already attracted the attention of capitalists in Europe, and all that remains is to arrange with the Government such terms and conditions as may be advantageous to both parties.

Table showing comparative condition of principal mining industries of the Russian Empire for the past ten years.

Year.	Gold.	Platina.	Silver.	Tin.	Copper.	Zinc.
	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Tons.</i>	<i>Tons.</i>
1875.....	71,856	3,391	21,816	2,378,160	4,020	4,379
1876.....	73,944	3,456	24,588	2,566,008	4,256	5,079
1877.....	90,108	3,796	24,516	2,646,612	3,850	5,089
1878.....	92,692	4,536	25,164	3,070,116	3,868	5,101
1879.....	94,752	4,968	25,102	2,982,312	3,432	4,745
1880.....	95,112	6,444	22,212	2,518,092	3,519	4,820
1881.....	80,784	6,562	20,736	2,167,848	3,806	4,997
1882.....	79,452	8,975	17,604	1,258,452	3,946	4,910
1883.....	78,552	7,773	16,200	1,193,904	4,787	4,028
1884.....	78,424	4,932	21,240	1,389,600	6,834	4,745

Year.	Cast-iron.	Iron.	Steel.	Coal.	Petroleum.	Salt.
	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Gallons.</i>	<i>Tons.</i>
1875.....	469,050	333,858	14,206	1,867,908	35,327,711	683,845
1876.....	485,221	321,647	19,715	2,003,382	44,524,411	787,316
1877.....	439,259	292,742	48,651	1,964,467	54,069,822	521,139
1878.....	458,559	300,563	70,582	2,771,671	66,226,892	858,213
1879.....	475,430	307,816	230,779	3,208,284	92,801,306	898,738
1880.....	492,558	320,949	338,199	3,614,127	92,908,502	856,294
1881.....	515,910	321,105	322,332	3,838,652	174,920,806	913,218
1882.....	508,266	326,732	272,164	4,143,483	218,280,675	1,831,852
1883.....	529,324	354,731	243,827	4,370,375	260,928,562	1,245,500
1884.....	559,901	393,060	227,400			

FISHERIES.

The fisheries of the Russian Empire, apart from their commercial importance, are of marked significance and value to a population obliged by their religion to observe so many fast days during the calendar year. The amount consumed per head has not been computed, but it must be very large, perhaps greater than in any other country, the littoral of the United States and Canada excepted. The rivers teem with almost every variety, and the accounts given by travelers and writers of the annual run of migratory fish in the Obi, Yenessei, Lena, Amur, Anadir, and other Siberian rivers, trench upon the domain of piscatorial romance.

The fish usually found in these waters are the salmon, herring, mullet, pike, perch, bleak, sturlet, sturgeon, nelma, and muk-sum. There are large fisheries in the Gulf of Obi and Taz, where fish are caught in summer and placed in ponds until cold weather approaches. They are then taken out, frozen, and sent to St. Petersburg, 2,000 miles away, for sale.

In June they begin their ascent of the Obi. Below Ozdork they form shoals and can be taken out by the hand. Large quantities are dried for the fair at Nijni-Novgorod. Erman estimates the annual run to be not less than 26,000,000. In the Lower Amur sturgeon weighing from 200 to 300 pounds are caught, the dried bones and cleaned gelatinous entrails forming a prominent article of commerce with the Manchu Tartars, the price of the bones being \$1, and of dried entrails \$1.75, per pound. On the Ussuri, during the salmon spawning season, the traveler can, from the banks, with his hand lift the fish by the dozen.

At Nicolaevsk salmon weighing from 15 to 25 pounds apiece can be bought during the season, lasting from the 15th of August to the 15th of September, at \$2.50 per 1,000 fish. About 1,000,000 pounds are salted annually, but exportation is of very recent growth. Throughout the Primarsk province the price of dried and salted or smoked fish ranges from \$2 to \$5.50 per 100 pounds.

During the spawning season the fish enter the Anadir and other rivers of the Primarsk in such vast multitudes that they obstruct the channel. The noise made by the movement of their fins may be heard at a considerable distance and the water rises upon the banks. Even the half wild dogs of the Chuckchees, Koriaks, and Kamchatdales, which draw their sledges over the snow, wade into the stream and take the fish out in their mouths. The water becomes undrinkable, and the atmosphere is poisoned by the decomposition of millions of the finny tribe who perish in the mad rush for the spawning ground.*

The bulk of all this catch is consumed by the semi-barbarous tribes at present, and some idea may be formed of its extent when we remember that

the support of a dog is reckoned to be equal to

100,000 herrings annually. Still the day is not far distant when this valuable supply will find its way into countries not so blessed with this abundant element of food. The Volga, Don, Dnieper, Neva, and Vistula (rivers of European Russia), the Black and Caspian seas, the Sea of Azoff, and the Gulfs of Finland and Bothnia yield their tribute also; but correct statistical information is lacking, save in the amount and value of exports.

For the years 1885 and 1886 the exports of fish and fish products were as follows:

Description.	1885.		1886.	
	Number of pounds.	Value.	Number of pounds.	Value.
Fish roes	4,783,824	\$224,403	5,077,512	\$269,358
Caviar	821,124	526,429	987,552	618,386
Fresh fish	2,457,792	119,636	2,908,908	169,069
Fish in oils.....	12,672	1,326	2,880	539
Smoked and salted fish.....	6,774,228	577,493	8,701,452	469,763
Fish-oils.....	153,645	6,768	94,896	7,651
Fish glue, entrails, and bones.....	263,520	264,461	261,512	412,425
Total.....	15,266,808	1,720,516	18,034,712	1,947,291

FINANCES.

To exhibit the resources and expenditures of the Empire a detailed statement of the estimated receipts and expenditures for 1888 (comparing the same with the year 1887) will prove of value. This statement has created great interest in Europe and should be of equal interest in America. The ruble is of such an ambulatory character that it seems impossible to determine just what is its true value in American currency. In this table I prefer to give the different items in rubles, with the qualifying remark that statisticians can take its value on the 1st day of January, 1887, which was about 43 cents, or its value on the 1st day of January, 1888, at $41\frac{3}{4}$ cents per ruble. At the moment of writing this report its value is about $40\frac{7}{8}$ cents, with every indication of further depreciation. In the following tables the minister of finance has reduced the metallic ruble (value 75 cents) to the value of the credit ruble (42 cents) in American currency, so that each item is stated in its credit equivalent:

TABLE G.—*Estimated receipts and expenditures of the Empire of Russia for 1888 compared with actual receipts and expenditures for 1887.*

RECEIPTS.

I.—*Ordinary receipts.—Taxes.*

A.—DIRECT TAXES.

	Estimated. Budget for 1888. <i>Rubles.</i>	Actual. Budget for 1887. <i>Rubles.</i>
Personal, land taxes and forestry tax	43,116,897	40,168,741
Trade licenses	29,758,000	27,200,000
Five per-cent. tax on the income of capital.....	10,983,000	10,397,000
Total direct taxes.....	83,857,897	77,765,741

B.—INDIRECT TAXES.

1. Excise and consumption duties:

Tax on spirits, wine and malt liquors.....	252,137,800	236,450,380
Tax on tobacco.....	26,596,000	79,549,000
Tax on sugar.....	17,164,000	19,708,000
Tax on kerosene.....	5,000,000	
Tax on matches	1,000,000	
Duties on imports.....	124,583,000	115,724,000

2. Imposts:

Stamps.....	19,800,000	16,520,000
Registry fees.....	10,110,000	10,270,000
Fees on transmission of property	3,700,000	3,400,000
Passports.....	3,295,000	3,293,000
Taxes on travelers and on goods by express.....	8,100,000	9,000,000
Tax on fire insurance companies' policies	3,377,000	3,311,000
Tax on the increase of wages of state officials.....	1,151,000	1,090,000
Various taxes	4,652,159	3,388,830
	480,665,239	441,704,210

2.—ROYAL TAXES.

Tax on mines.....	2,773,789	2,007,755
Income from the mint	201,800	568,340
Postal service	17,352,500	17,109,000
Telegraphic service	9,654,000	9,624,630
Total of royal taxes	29,982,089	29,009,725

3.—INCOME FROM DOMAINS.

	8,922,884	8,682,335
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TABLE G.—*Estimated receipts and expenditures of the Empire of Russia, etc.*—Continued.

	Estimated. Budget for 1888. <i>Rubles.</i>	Actual. Budget for 1887. <i>Rubles.</i>
4.—REDEMPATORY PAYMENTS.		
Payments made by freed serfs for land which formerly belonged to land proprietors	43,229,777	44,744,208
Payments made by freed serfs for land which formerly belonged to the state	53,462,787	53,066,911
Total payments made by freed serfs.....	96,692,560	97,811,119
5.—DIVERS RECEIPTS.		
Technical establishments, books and newspapers published by the Government.....	1,408,034	1,427,850
Sale of economic products.....	2,030,697	2,111,258
Payments made by the railway societies on their obligations...	47,092,039	32,161,952
Receipts coming from interest-bearing securities belonging to the Government and outcome of banking operations.....	8,257,823	21,752,694
Contributions of scholars belonging to governmental schools...	717,149	712,338
Recovery of debts.....	21,505,337	20,240,081
Fines, damages, and interest.....	1,267,518	1,630,896
Funds collected from the revenue of towns and on other resources	13,241,706	12,598,313
Divers receipts	15,080,927	10,252,015
Total of divers receipts	110,601,226	102,887,398
Total of ordinary receipts	851,767,628	793,197,776

N. B.—Certain receipts for the year 1887 in the above column are indicated by figures differing somewhat from the estimated budget of that year, because some amounts have been transferred from one account to another in the budget for 1888.

II.—*Extraordinary receipts.*

War contributions.....	3,722,100	3,464,115
From perpetual deposits at the Bank of Russia.....	715,000	862,000
Collecting money lent to railways.....	1,000,000	1,625,000
Special capital become available and carried to the account of the general resources of the treasury.....	2,506,910	9,500,000
Sums remaining from the realization of the 4 per cent. interior loan of 1887.....	25,780,885	27,058,634
The budget of 1887 included besides the receipts realized by the credit operation for the construction of railways and ports.....		42,463,079
Total of extraordinary receipts	33,724,895	84,972,828

III.—*Receipts on interdepartmental transactions.*

Ore and worked metals delivered to the ministers of war and marine and coming from the works and mines of the state.....	1,855,080	2,306,157
Food, forage, and material supplied by the ministers of war and marine to other administrations, and compensation of divers expenses made by certain administrations for the account of other services		

EXPENDITURES.

ORDINARY EXPENSES.—PUBLIC DEBT.—LOAN DEPARTMENT.

Loans contracted for the general wants of the state.

	Interest.	Sinking fund.	Estimated, 1888.	Actual, 1887.
Debts concluded payable in gold:				
Abroad and on limited terms	8,487,393	5,277,994	13,765,387	13,840,928
Abroad and on unlimited terms	8,852,757	2,129,511	10,982,268	10,984,452
Interior and on limited terms	1,974,289	2,286,200	4,260,480	4,260,480
Interior and on unlimited terms			4,000,000	4,000,000
Railroad bonds which become property of the state..	816,927	46,206	863,133	863,137
Total.....			33,871,277	33,948,997
Paid to banking-houses.....			67,020	67,314
Difference in exchange			27,150,638	22,790,927
			61,088,935	56,807,238
Debts contracted in rubles (paper currency):				
Exterior and on limited terms.....	22,000	350,000	372,000	386,000
Exterior and on unlimited terms	2,117,961	1,877,018	3,994,979	3,994,992
Interior and on limited terms —				
(a) To different administrations and persons.....	218,222	87,547	305,769	305,769
(b) Five per cent. bills of the Bank of Russia.....	15,986,781	13,976,450	29,963,231	29,890,251
(c) Oriental loans.....	37,827,955	6,172,000	43,999,955	43,999,855
(d) Five per cent. loans.....	11,548,000	1,740,000	13,288,000	13,284,750
(e) Interior 4 per cent. loan.....	3,996,372	181,400	4,177,772	.....
(f) Treasury bonds.....			9,108,600	9,720,000
(g) Liquidation bonds for the Kingdom of Poland..	1,544,361	1,639,763	3,124,124	3,184,124
Interior and on unlimited terms —				
(a) Ordinary and inalienable loans, and for the clergy of the Kingdom of Poland.....	2,339,619	804,650	3,144,269	3,144,393
(b) Perpetual railway annuities			5,000,000	5,000,000
(c) Four per cent. perpetual annuity bills.....			6,154,265	6,154,265
(d) Perpetual deposits			44,425	36,878
(e) Sums to be paid on the capital and interest of deposits with the ancient establishments of credit.....	208,158	1,121,198	1,329,356	1,020,000
Railway obligations which have become the property of the state	517,150	17,000	534,150	.....
Total.....			124,600,895	120,121,277
Total of the payments on loans contracted for the general wants of the state.....			185,689,830	176,928,515
Payment of railway obligations in rubles (metallic currency):				
Payments to be collected from railway companies hereafter	37,316,450	1,858,310	39,174,760	39,175,717
Paid to banking-houses.....			73,167	73,171
Difference in exchange			31,398,342	26,296,755
Total.....			70,646,269	65,545,643
			26,212,583	.....
		1,858,310		

RUSSIAN BUDGET.

Official household :	Estimated. <i>Rubles.</i>	Actual. <i>Rubles.</i>	Ministry of foreign affairs— Continued.	Estimated. <i>Rubles.</i>	Actual. <i>Rubles.</i>
Council and chancery of the Empire.....	1,013,305	948,980	the governor-general of Warsaw ; for foreign correspondence, and the agent of the minis- ter at Odessa.....	396,171	398,071
Jurisprudence attached to the council of the Empire and state print- ing offices.....	* 318,431	332,946	Embassies and legations..	1,161,600	1,160,350
The chancery of the committee of ministers..	97,775	94,460	Consulates.....	675,778	675,778
Private chancery of the Emperor.....	508,070	507,993	Extraordinary expenses abroad	2,047,428	1,839,659
Committee of requests and chancery of the secretary for petitions addressed to H. I. M. the Emperor.			Various expenses.....	264,461	264,550
Maintenance of the com- mittee and chancery...	109,135	103,255	Total for the minis- try of foreign af- fairs.....	4,545,438	4,338,408
Help to the poor and education of children...	73,589	78,742	Ministry of war :		
Total for the official household	2,125,305	2,066,376	Central administration....	2,300,626	2,305,627
Synod :			Administration in the provinces.....	6,504,027	6,467,852
Central administration....	246,789	246,789	Technical board and schools.....	6,845,668	7,001,111
Chapter of cathedral, consistories, and eccle- siastical regencies, archbishoprics, and bishoprics	1,441,963	1,437,493	Board of health.....	3,751,712	3,760,277
Convents and monasteries	402,472	402,472	Equipment and clothing..	19,899,609	18,508,311
Town and country clergy.	6,399,904	6,392,022	Provisions.....	39,112,955	40,943,751
Subventions to establish- ments for the instruc- tion of the clergy.....	1,744,860	1,748,060	Forage.....	18,757,388	19,030,116
Orthodox establishments abroad.....	197,251	188,122	Pay.....	49,088,958	48,499,554
Works of construction....	275,499	265,541	Lodging of soldiers in barracks.....	13,684,796	13,890,761
Various expenses.....	321,739	307,643	Building of houses.....	14,461,018	15,191,437
Total for the synod...	11,030,477	10,988,142	Manufacture of arms and ammunition.....	10,981,869	10,799,582
The Emperor's household :			Siege and field artillery...	1,994,088	1,948,453
Endowment of Her Majesty the Empress and the august children of Their Imperial Majesties; the main- tenance of the courts of their imperial highnesses the Grand Duke and Duchesses, and the institutions be- longing to the ministry of the Emperor's household.....	10,560,000	10,560,000	Transportation of troops, couriers, and dispatch- es.....	7,342,491	7,031,707
Ministry of foreign affairs :			Maintenance of con- scripts up to the time of their entering the service	2,370,600	2,295,600
Central administration and maintenance of the functionaries attached to the general director of the civil service in the Caucasus as well as			Instruction of reserves....	1,222,804	824,883
			Topographical surveys...	260,000	255,500
			Rewards and help.....	2,539,491	2,471,155
			Retained for the retreat fund.....	2,743,171	2,737,486
			Expenses of the general government of Toork- istan	886,324	983,321
			Extraordinary expenses..	531,753	632,965
			Expenses for the build- ing of the Trans-Cas- pian line.....	1,938,598	1,921,747
			Divers expenses.....	1,188,162	965,747
			Total for the minis- try of war.....	208,412,108	208,466,51
			Ministry of marine :		
			Administration of ports...	1,732,687	1,742,330
			Rewards, help, and sub- vention for the educa- tion of children.....	438,468	476,040
			Schools.....	482,350	531,602
			Board of health	755,600	755,600

RUSSIAN BUDGET.—Continued.

Ministry of marine — Continued:	Estimated. <i>Rubles.</i>	Actual. <i>Rubles.</i>	Ministry of finance — Continued:	Estimated. <i>Rubles.</i>	Actual. <i>Rubles.</i>
Pay.....	3,572,318	3,599,413	Expenses (re-imbursable).....	12,339,014	11,641,614
Provisions.....	1,046,593	891,393	Divers expenses.....	4,155,714	4,008,988
Clothing.....	962,344	898,733			
Navigation in Russian waters.....	2,605,563	2,835,787	Total for the ministry of finance.....	109,244,340	104,877,745
Navigation abroad.....	2,392,081	2,065,577	Ministry of domains:		
Hydrographical surveys..	398,041	417,159	Central administration....	935,126	935,663
Naval artillery and torpedoes.....	3,859,000	3,650,098	Administration in the provinces.....	7,233,347	7,108,766
Naval construction.....	14,816,729	14,512,838	Forestry, technical and agronomical establishments and schools.....	1,038,336	1,072,638
Works and admiralties...	2,210,743	2,089,029	For the encouragement of agricultural and mineral industry.....	462,882	506,313
Rent, maintenance, construction, and repair of buildings.....	2,971,830	3,065,577	Management of forests....	825,955	869,200
Missions.....	385,000	400,000	Land surveys.....	476,501	485,431
Divers expenses.....	965,068	1,300,108	Buildings and general charges.....	3,516,087	2,490,272
Total for the ministry of marine.....	39,594,424	39,247,488	Material manufactured at state metallic works for the ministries of war, marine, and ways of communication.....	2,315,655	3,453,166
Ministry of finance:			Land taxes paid to the zemstows or provincial government for the lands and forests of the state.....	2,675,000	2,750,000
Central administration....	1,628,685	1,629,674	Rent of domains commuted in money.....	2,000,000	2,000,000
Provincial administration.....	28,612,315	27,698,336	Divers expenses.....	775,008	713,672
Schools.....	100,366	100,604			
Manufacture of paper for the state.....	710,298	601,436	Total for the ministry of domains.....	22,253,897	22,385,121
Pensions and help to the pensioners and to the widows and children....	32,155,000	30,096,000	Ministry of the interior:		
Subvention to different administrations and shareholding companies.....	5,364,283	4,738,804	Central administration....	1,270,313	1,248,132
Payments of guaranty to the railway companies.....	14,600,000	14,963,611	Censor.....	227,038	277,038
Divers indemnities, in consideration of the reduction of interest paid by the bank and of revenue which have returned to the treasury.....	2,557,482	2,556,982	Provincial administration..	34,692,829	34,740,041
Restitution of sums unduly received.....	1,400,066	1,180,066	Schools.....	83,128	82,928
Premiums on beet sugar exported.....	650,000	400,600	Clergy of foreign religions	1,754,383	1,758,401
Recruiting.....	521,000	507,000	Board of health and quarantine.....	2,414,519	2,473,042
Edifices, general expenses of the organization of excise on spirits, custom-houses, and the mint.....	2,449,552	2,526,866	Penitentiary department..	13,764,322	13,265,405
			Location and construction of edifices.....	1,969,648	1,995,731
			Subvention to public establishments, of assistance to towns, etc.....	1,260,266	1,704,691
			Postal correspondence and telegraphic services.....	2,606,593	2,688,622
			Subvention for the maintenance of posting houses.....	7,110,123	7,251,512

RUSSIAN BUDGET.—Continued.

Ministry of the interior— Continued :	Estimated. <i>Rubles.</i>	Actual. <i>Rubles.</i>	Ministry of justice — Con- tinued :	Estimated. <i>Rubles.</i>	Actual. <i>Rubles.</i>
Missions of functionaries..	1,268,000	1,248,661	Missions and displace- ments.....	923,200	948,200
Miscellaneous expenses...	3,310,038	3,367,354	Costs of justice.....	900,000	905,000
Total of the ministry of the interior.....	73,448,261	73,874,208	Divers expenses.....	230,053	272,677
Ministry of public instruc- tion :			Total for the minis- try of justice.....	21,331,022	20,505,817
Central administration.....	248,689	246,221	Control of the Empire :		
Schools.....	562,054	562,515	Control of the Empire and institutions attached to it.....	3,391,107	3,275,583
Universities and lyceums..	3,276,601	3,387,407	General direction of im- perial studs :		
Gymnasium, progymna- siums, professional schools, and other es- tablishments of sec- ondary instruction.....	9,405,611	9,567,866	Central administration....	54,481	54,381
District, parish, and pri- mary schools and spe- cial establishments.....	4,797,862	4,438,768	State studs and racing establishments of Mos- cow and St. Peters- burg.....	214,881	210,279
Subvention for scientific instruction of profes- sors and of teachers....	1,725,175	1,750,924	Costs of development.....	734,060	731,322
Buildings	921,936	493,594	Divers expenses.....	97,038	105,782
Divers expenses.....	443,477	388,019	Total for the general direction of the imperial studs.....	1,100,460	1,101,764
Total for the minis- try of public in- struction.....	21,381,405	20,835,314	Total.....	845,242,423	826,756,400
Ministry of ways of com- munication :			Expenses not foreseen by the budget for the ex- traordinary wants during the present year..	6,000,000	3,000,000
Central administration.....	1,695,280	1,662,513	Total of ordinary expenses.....	851,242,423	829,756,400*
Provincial administration..	1,486,441	1,503,187	Extraordinary expenses :		
Schools.....	147,757	148,845	For the construction of railroads and ports.....	34,250,100	48,414,194
River communications, canals, etc.....	4,279,720	4,525,520	Auxiliary expenses :		
Roads.....	5,660,414	5,522,865	Ore and worked metals delivered by the mines and works of the state to the minister of war and marine.....	1,855,080	2,306,157
Expenses of railways be- longing to the State.....	15,337,041	11,980,653	Provisions, forage, and other supplies made to administrations and expenses made by cer- tain administrations for the account of other departments	733,507	864,921
Divers expenses.....	277,054	298,606	Total of auxiliary expenses.....	2,589,587	3,171,078
Total for the minis- try of ways of com- munication.....	28,883,707	25,642,189	General total of ex- penses.....	888,082,110	881,341,672
Ministry of justice :					
Senate and its institu- tions.....	1,841,411	1,822,525			
Central administration.....	397,277	405,977			
Government, district, ward, and special judi- ciary institutions.....	14,778,536	13,902,122			
Public prosecutor's office..	273,142	278,127			
Surveys of Government land	1,766,580	1,761,648			
Imperial School of Law...	220,841	208,541			

*The expenses for the year 1887 of the different ministries are indicated by sums differing from those of the estimated budgets of the same year on account of the transfer of sums which have been expended after the examination of the budgets of the different ministries.

ABSTRACT.

RECEIPTS.

I.—*Ordinary receipts.* 1. *Imposts.*
[Estimated.]

		<i>Rubles.</i>
		83,857,897
Direct taxes.....	356,082,239	
Indirect taxes.....	124,583,000	
Import duties.....		480,665,239
		29,982,089
Royal impost.....		49,968,617
Income from domains.....		96,692,560
Payment of loans issued for the benefit of the serfs.....		110,601,225
Divers receipts.....		851,767,628
Total of ordinary receipts.....		

II.—*Extraordinary receipts.*

War contribution.....	3,722,100
Perpetual deposits at the Bank of Russia.....	715,000
Reimbursements to be made by the railway companies for advances made by the state.....	1,000,000
Sums recovered and carried to the account of the general sources of the treasury.....	2,506,910
Sums remaining from the realization of the 4 per cent. interior loan of 1887...	25,780,885
Total of extraordinary sources.....	33,724,895
Auxiliary receipts.....	2,589,587
General total of receipts.....	888,082,110

EXPENSES.

I.—*Ordinary expenses.*

Loans.....	185,689,830
Railway obligations.....	70,646,269
Special laws for the benefit of freed serfs.....	31,603,373
Official household.....	2,125,305
Synod and orthodox religion.....	11,030,477
Ministry of the Emperor's household.....	10,560,000
Ministry of foreign affairs.....	4,545,438
Ministry of war.....	208,412,108
Ministry of marine.....	39,594,424
Ministry of finance.....	109,244,340
Ministry of domains.....	22,253,897
Ministry of the interior.....	73,448,261
Ministry of public instruction.....	21,381,405
Ministry of ways of communication.....	28,883,707
Ministry of justice.....	2e,331,022
Control of the Empire.....	3,392,107
General direction of the imperial studs.....	1,106,460
	845,242,423
Expenses not estimated in the budgets for the extraordinary wants in the running year.....	6,000,000
Total of ordinary expenses.....	851,242,423

PUBLIC DEBT.

State of the public debt up to January 1, 1887.

I. DEBT WITH INTEREST.

Holland loans of 1798 and 1815.....	florins, 5 per cent.	16,100,100
Loan 1817.....	credit, —	38,888,201
Loans of 1820 to 1855.....	{ metallic, } 5 per cent. {	70,289,300
	{ credit, }	52,359,715
Loans of 1840 to 1847.....	credit, 4 per cent.	900,000
Loans of 1849 to 1860.....	£ sterling, 4½ per cent.	5,610,000
Consols of 1859.....	credit rubles, 4 per cent.	153,856,614
Consols of 1860.....	“ 5 per cent.	288,377
Loan of 1859.....	£ sterling, 3 per cent.	2,878,500
Loan of 1859.....	metallic rubles, 4 per cent.	35,629,500
Loans of 1862.....	£ sterling, 5 per cent.	15,000,000
Obligations of the Bank of Russia, 1862.....	credit rubles, “	417,208,100
Debts re-imbursable on account of liquidation of the old establishments of credit.....	credit rubles, “	265,707,940
Rente of 1862.....	credit rubles, 5½ per cent.	70,602,000
Obligations of the Bank of Russia of 1863 to 1881.....	credit rubles, 5 per cent.	201,060,550
English and Holland loans of 1864.....	florins, “	52,595,000
English and Holland loans of 1866.....	£ sterling, “	3,567,700
Interior loans with premium of 1864 and 1866.....	credit rubles, “	176,360,000
Eastern loans of 1877, 1878, and 1879.....	credit rubles, “	762,437,100
Exterior of 1877.....	£ sterling, “	13,346,020
Rente in gold, loan of 1883.....	metallic rubles, 6 per cent.	50,000,000
Rente in gold, loan of 1884.....	“ “ 5 per cent.	20,000,000
Rente of 1884.....	credit rubles, “	100,000,000
Perpetual deposits.....	“ “ 4 per cent.	561,483
To divers administrations.....	“ “ —	4,451,523
Treasury bonds.....	“ “ 4 ³² / ₁₀₀ per cent.	240,000,000

2. DEBTS WITHOUT INTEREST.

Credit notes.....		544,960,854
Debt of the treasury to the Bank of Russia.....		100,000,000
Total.....	{ Metallic rubles.....	211,918,800
	{ Credit rubles.....	3,144,732,457
	{ Florins of Holland...	68,695,000
	{ £ sterling	40,402,220

Debt of the Kingdom of Poland.

Obligations of the converted loan of 1844.....	metallic rubles, 4 per cent.	16,085,962
Obligation of liquidation and debts of 1831 to 1852.....	credit rubles, —	40,921,040

Railway obligations issued by the state.

Obligations of the Nicholas Railway of 1867 and 1869.....	francs, 4 per cent.	553,959,599
Consolidated obligation of the Russian railways of 1870 to 1884.....	£ sterling, 5 and 4½ per cent.	82,644,400
Consolidated obligations of Russian railways.....	metallic rubles, 4 per cent.	148,267,625
Obligations of railways acquired by the State.....	“ “ —	17,871,628
Grand total.....	{ Metallic rubles	394,144,015
	{ Credit rubles.....	3,185,653,497
	{ Holland florins.....	68,695,000
	{ £ sterling.....	122,016,620

The commerce of Russia for the past three years shows very great changes both in the value and extent of imports and exports. Wherever a decrease in imports or an increase in exports is shown it is due almost entirely to the depreciation of the currency. The value of the ruble has fallen steadily from 47 cents in 1883 to 40 cents in 1888. It will probably be better understood by American financiers if it is said that the premium on gold, which was 60 per cent. in 1883, is now about 83 per cent. The following official tables give the comparative increase and decrease in total exports and imports, together with the changes in the values received and sent from and to different countries. With a high premium on gold exports have been unduly increased and imports diminished, because the products peculiar to Russia have not advanced *pari passu* with gold, while the Russian exporter has always been favored by an increasing value on his bills of exchange against shipment.

Value of imports from principal countries.

Countries.	1884.	1885.	1886.
Germany	\$113,415,510	\$91,528,840	56,871,398
United Kingdom.....	79,411,110	60,071,148	46,248,443
Austria-Hungary.....	13,229,595	13,796,112	7,141,004
France	12,055,695	8,777,436	5,159,329
Turkey	8,908,740	7,456,464	7,101,369
Italy	7,582,620	4,116,192	3,247,737
United States	23,958,242	15,460,000	11,249,383
Holland	3,958,365	3,193,356	1,679,088
Belgium	6,191,355	5,183,400	3,732,958
Norway and Sweden	3,897,220	3,316,104	2,356,343
Roumania	1,440,930	1,871,748	1,034,017
Greece.....	1,095,210	525,336	355,104
South America			630,692
All other countries.....	38,531,808	26,253,484	37,314,724
Total imports	313,676,400	241,549,620	184,120,309

Value of exports to principal countries.

Countries.	1884.	1885.	1886.
United Kingdom.....	\$98,112,885	\$97,938,912	\$60,476,343
Germany	117,981,465	90,476,088	50,088,028
France	25,337,535	21,518,424	12,727,739
Austria	19,919,535	17,257,860	10,636,779
Holland	30,368,235	20,668,092	15,451,513
Belgium	14,758,245	14,744,388	7,642,745
Turkey	5,305,770	7,902,936	6,967,476
Norway and Sweden	11,871,225	11,944,716	6,121,496
Italy	12,035,300	16,225,632	9,221,529
Roumania	5,091,630	2,432,064	1,686,482
	3,169,175	5,711,916	3,824,896

The value of exports to and imports from the United States, although given in the official tables, are totally unreliable, as much intended for the United States goes to the account of the United Kingdom and Germany, because they are transported through these countries first and are put down as belonging to their commerce. The official figures give the exports from Russia to the United States for the year 1886 as \$166,250, whereas at the St. Petersburg consulate-general alone invoices to the amount of \$861,607 were certified.

No completed comparison of the exports and imports for the years 1886 and 1887 have been prepared. For the eleven months ending November 30, 1887, the value of movement was (taking the ruble at 50 cents American currency) as follows:

	Exports.		Imports.	
	1887.	1886.	1887.	1886.
Articles of food.....	\$160,600,500	\$116,985,000	\$23,977,000	\$41,093,000
Raw material used in manufactures	87,128,500	72,522,000	102,336,000	103,126,000
Animals	5,520,000	5,187,500	237,000	288,500
Manufactured articles.....	6,045,500	5,634,500	26,237,000	32,818,500
Total.....	259,300,500	200,329,000	152,787,000	178,226,500

Fleet in 1883.

Description of vessels.	Number.	Cannons.	Tonnage.	Horse-power.
<i>In the Baltic.</i>				
Iron-clad steamers	32	360	122,500	10,910
Armed steamers.....	39	335	60,630	15,227
Transport steamers	59	.....	17,415	4,355
Sailing-vessels	8	.....	2,610	.....
Torpedo boats.....	95	.....	2,316	3,860
<i>In the Black Sea.</i>				
Iron-clad steamers	7	61	37,241	5,780
Armed steamers	27	105	25,732	3,440
Transport steamers	59	.....	6,520	2,100
Torpedo boats	16	.....	522	760
<i>In the Caspian Sea.</i>				
Armed steamers	12	26	4,215	845
Steamers	4	.....	720	.....
<i>In the Lake of Aral.</i>				
Armed steamers	6	13	759	227
<i>In Siberia.</i>				
Armed steamers	8	42	3,783	860
Transport steamers	13	.....	537	247
Torpedo boats	6	.....	144	240
Total.....	391	942	185,644	48,851

Table giving the flag, tonnage, class, and crews of vessels entering Russian ports for the year ending January 1, 1887.

Flag.	Sailing ves- sels.	Tonnage.	Steamers.	Tonnage.	Total crew.
Russian	712	68,422	501	32,882	21,530
Norwegian and Swedish.....	573	76,265	810	125,257	14,209
Danish.....	419	22,147	456	152,945	9,475
German	474	50,595	950	224,133	16,824
British	95	10,226	2,551	1,198,143	51,903
French	11	979	36	27,558	2,062
Italian	155	28,809	49	27,976	3,817
Austrian	48	11,497	473	120,717	11,156
Grecian	564	71,914	113	45,785	7,086
Turkish	270	11,598			1,983
Dutch.....	137	18,736	47	16,747	1,933
Belgian.....			21	12,679	524
United States.....	1	587			15
Others	13	1,172	8	4,519	256
Total.....	3,472	372,947	6,015	1,989,338	142,571

Table giving the flag, tonnage, class, and crew of vessels clearing from Russian ports for the year ending January 1, 1887.

Flag.	Sailing ves- sels.	Tonnage.	Steamers.	Tonnage.	Total crew.
Russian	810	24,505	432	45,815	19,986
Norwegian and Swedish	575	36,195	710	125,168	13,592
Danish.....	319	22,147	449	150,561	9,323
German	473	50,456	954	226,161	16,917
British	92	9,706	2,555	1,194,970	51,950
French	11	916	35	26,835	1,990
Italian	156	29,008	50	28,490	3,870
Austrian	49	11,621	472	121,248	11,196
Grecian	558	71,093	114	46,676	7,079
Turkish	267	11,520			1,929
Dutch.....	138	18,965	46	16,404	1,910
Belgian.....			22	13,188	544
Others	13	1,172	8	4,519	256
Total.....	3,461	287,304	5,847	2,000,035	140,840

MISCELLANEOUS SUBJECTS.

It is not necessary to go very far afield to find the causes which have led to the long-continued commercial and financial depression in Russia. A depression which must necessarily last as long as the present conditions keep the economic development of the country in check. One sees a country large, rich, and populous, replete with all that constitutes wealth, with no
 and its currency at an enormous discount, its agricult-
 ting a lower

Take the railroads in Russia as an example. All of them are built upon strategic lines, without the slightest regard to the commercial or agricultural necessities of the country. As a natural sequence they are unable to pay their obligations, and as for dividends that is a thing rarely dreamed of. If they are ever prosperous it is in spite of the fact that they were ever constructed with any other idea than that of transporting men and material of war rapidly. In 1886 the total length of railways in Russia was 16,144 miles, of which 2,132 miles were opened by the state. The capital invested in these enterprises amounted in 1886 to 2,855,200,824 rubles and 56 copecks, divided as follows:

	Metallic rubles.	Paper rubles.
Shares	286,999,227.64	153,376,335.25
Bonds.....	1,152,523,019.11	255,636,669.83
Total	1,439,522,246.75	408,013,005.03

In converting the metallic capital into paper rubles at the average exchange of 1886 (at the rate of 1.70 ruble paper currency for one metallic ruble), the grand total capital invested is 2,855,200,824.56 paper rubles, equal at the present value of the ruble (40 cents to the dollar) to \$1,142,080,329.82.

Within the past five years there has been an increase of only 450 miles annually, and Russia to-day occupies the last place among the civilized states in the number of miles of railway to population. All that part of the Empire to the north, containing about 10,000,000 people, is absolutely without railways except where the Nicholas, Yaroslaw-Vologda, and Perm-Tumene lines touch it.

Siberia with its 4,000,000 inhabitants, with its boundless wealth of soil and minerals, has not one mile, with the exception of the short line to Tumene. In the country east of the Volga it is the same thing, save the line to Orenbourg. Notwithstanding all this, the nation supports the charges imposed in favor of the railway lines—charges amounting to one-tenth of the total imposts, direct and indirect.

The average distance of centers of production from the nearest railway in Belgium is about 2 miles; in England, about $3\frac{1}{3}$ miles; in the United States of North America, $3\frac{2}{3}$ miles (and this in an agricultural country such as the Russian Empire); in the whole of the great American continent, 13 miles; in Russia, 240 miles. In the United States, where the population is nearly half that of Russia, and whose territory is two and one-half times smaller than the Russian Empire, there are over 133,333 miles of railway, while there are only 18,000 miles of railway in Russia.

In order to put Russia on the same footing with North America, she should have 334,000 miles more of railway according to area, or 267,000 miles according to population. The railways which have been constructed during the past few years have

An idea may be formed of the outlook for the railway system in this country by the following table, showing what proportion of the gross receipts are absorbed by the ordinary expenses, and still the transportation charges are at least 40 per cent. higher than in America:

Table showing the percentage of working expenses to gross receipts.

	Percentage.		Percentage.
Warsaw-Bromberg	80.64	Orenbourg.....	67.04
Riajsk-Viasmk	86.22	Morshchansk-Syzrane	82.09
Vladicaucasus	94.19	Mitan	80.44
Oural	83.30	Dunaburg-Vitebsk	73.28
Donets	95.81	Orel-Griazy	70.92
Ivangarod-Dombroff.....	111.22	Fastow.....	61.90
Warsaw-Terespol	75.08	Otel-Vitebsk	65.88
Vistula	84.44	Riajsk-Morschansk.....	68.05
Baltic.....	88.90	Riga-Dunaburg.....	64.43
Libau-Romney	83.95	Trans-Caucasian.....	61.10
Novotorjok	65.05	Southwest.....	65.57
Lozoff-Sevastopol	68.04	Moscow-Brest	66.96

MOVEMENT OF POPULATION.

The following table gives the number of marriages, births, and deaths in Russia in Europe, Poland, Finland, and Siberia for the years during which the last statistics were prepared:

Countries.	Marriages.	Births.	Deaths.
Russia in Europe (1883).....	732,750	3,980,093	2,879,265
Poland (1880).....	62,771	294,021	189,514
Finland (1884).....	16,585	80,411	47,468
Siberia (1884).....	32,952	180,802	131,793

Taking the population for the same years we arrive at the following percentage of increase in population:

Countries.	Population.	Increase of births over deaths.	Percentage.
Russia in Europe (1883)	78,269,114	1,101,828	1.46
Poland (1880).....	7,245,419	104,507	1.42
Finland (1884)	2,203,358	32,943	1.49
Siberia (1884).....	3,947,903	49,009	1.24

The ratio of illegitimate to legitimate births in Russia in Europe is as follows: Legitimate 3,880,857; illegitimate, 99,236; showing that 2.49 per

As for immigration and emigration, very few people of other nationalities make Russia their permanent home. Foreigners, unless they bring something likely to be of great service to the Empire are not welcomed very cordially by the Government or people, and the policy of the Government has been to exclude certain classes of foreigners from Russia altogether, especially from her western frontier. "Russia is for Russians," and unless a man can make himself extremely useful to Russia and is in thorough sympathy with her habits and customs, he will find that they are more apt "to speed the parting than welcome the coming guest."

As no Russian can cross the frontier or change his residence from town to town or from house to house without permission of the police, it follows that emigration must be very restricted. In fact nearly all of it is involuntary, and as a rule emigrants are not of a very desirable class. If the Government objects to a person he is very easily sent across the frontier. But it is very questionable whether any large portion of the middle or lower class of Russians desire to change their nationality. The conditions surrounding the classes emigrating from central and western Europe to other lands differ materially from those which appertain to Russia.

1. Population has not reached that degree of congestion which renders it necessary that a portion should seek other homes. Land is cheap, as cheap as it is in America or Oceanica, and as fertile as the plains of Illinois or the valley of the Mississippi. In some parts of Siberia a Russian wishing to cultivate land can buy it of the Government at from 50 cents to \$1 per acre.

2. Labor of every kind is in demand, and if the prices obtained are much lower than in other countries the purchasing power of the wages received for the absolute necessities of life is commensurate.

3. The Russian mujik, or peasant, is, as a rule, contented with his lot; no one would imagine this statement to be true, looking at him with his surroundings. Apparently bound to the soil (*adscriptus glebæ*), living in a hovel, sustaining life on black bread and salted cucumbers, with few amusements and a long life of toil, one would think he would, from some innate consciousness, revolt from such a system and be ready to fly anywhere to escape from such a thralldom; but, on the contrary, he has no knowledge of anything better, his ancestors have lived and died thus in the very estate where he has his home, he is contented with his surroundings, he desires no elevation, no change, except to make a few extra copecks, which he will spend freely for tea and sugar, or vodka. He is perfectly loyal to the Czar and to the authorities. It may sicken the heart of a philanthropist to see (what he would term) squalor and ignorance content with its lot, but alas the facts exist. Education alone will bring about any change, and I am glad to report the progress of this, the greatest aid to the material advancement of a nation. Below I give the statistics of the

PUBLIC SCHOOLS.

The following table shows the number of schools and scholars in attendance upon the same in Russia in Europe, Central Asia, Siberia, Poland, Finland, and the Caucasus:

Schools.	No. of schools.	Male scholars.	Female scholars.	Scholars not classed.	Total scholars.
Public schools	39,194	1,691,873	600,350	147,911	2,440,134
Common schools, primary and elementary	38,729	1,625,418	595,251	147,911	2,368,550
Common schools under minister of public instruction....	1,034	133,449	94,547	.....	227,996
Private schools (common)	126	6,860	10,078	.....	16,938

UNIVERSITIES IN RUSSIA.

There are nine universities in Russia, viz, at St. Petersburg, Moscow, Kharkov, Odessa, Kazan, Kieff, Dorpat, Warsaw, and Helsingfors, in Finland. The number of scholars attending these universities is 11,848, of whom those receiving instruction in theology number 186; in history and philology, 1,096; in law, 3,100; in mathematics, 1,444; in natural sciences, 1,883; in medicine, 4,782; in oriental languages, 57.

There are three superior classes for women, viz, at Kieff, with 337 students; at Moscow, with 200 students; and at St. Petersburg, with 915 students.

Technical schools in the Russian Empire number 435, of which 403 are for males, with 54,040 students, and 32 for females, with 3,657 students.

The percentage of increase in schools from 1874 to 1883 was 19.58 per cent. The increase in the attendance of male scholars was 40.72 per cent., and of female scholars 72.28 per cent.

PRICES OF FOOD, ETC.

It is almost impossible to give the prices of labor and food which would not be misleading. What is true about St. Petersburg and Moscow is thoroughly untrue at Kharkov and Tomsk.

On account of the high duties on importations whatever enters Russia from a foreign country is enormously expensive. English woollens, dry goods, iron, steel, and hardware, French and Belgian silks and laces, Parisian gloves and novelties, German manufactures, American machinery and agricultural implements, and canned goods are all of them sold at very high prices. But whatever is produced on the soil of Russia is cheap, and at some points beyond the comprehension of an American buyer. For example, *mince* 7 1/2 cents per pound, would

wood, which is sold at \$2 per 115 cubic feet, brings \$6.65 at Odessa; eggs are 24 cents per 100 in the country places against \$1.60 in St. Petersburg, and the same comparative prices prevail for all domestic products.

POST-OFFICES, TELEGRAPH, ETC.

The following statement shows the number of post-offices and the business transacted by the same in the years 1885-'86:

Number of post-offices.....	4,830
Number of simple letters passed through the same	139,103,194
Postal-cards.....	11,642,962
Registered letters	12,030,224
Valuable letters (containing, as declared, \$254,517,459)	10,423,649
Newspapers.....	102,515,895
Sample packages.....	17,503,609
Total receipts.....	\$13,222,544

The telegraph lines in Russia are owned and operated by the Government. In the year 1884 the working of the telegraph lines showed:

Number of miles of telegraph wire and cables in operation	155,295
Number of officers.....	3,325
Number of dispatches.....	10,471,084
Total receipts.....	\$7,074,339
Expenses.....	6,546,306
Profits.....	528,033

DEATH-RATE IN RUSSIA.

The death-rate in Russia has always attracted the attention of sanitary reformers throughout the world. At one period St. Petersburg was reckoned as fourth in the list of cities according to death-rate. This in some measure is growing less each year. Taking its population as officially declared, we have population, 929,094; number of deaths, 34,424; number of deaths in each thousand, 36. This is still high compared with American and European cities; but as compared with the rate some twenty years ago (40 to the 1,000), it shows a gradual improvement. In the provinces the rate is still higher, particularly among infants, owing to the lack of medical attendance, proper care, and nursing. The mortality of children between the ages of from one month and two years is extraordinary, but the Russian people are a strong, vigorous, and prolific race, and despite this death-rate among the younger children census reports show a gain each year, as remarked above.

According to the annual register of 1888 (issued since Table A was prepared) the population of the Empire in 1885 was as follows:

Russia in Europe	81,725,185
Kingdom of Poland	7,960,304
Duchy of Finland.....	2,176,421
Caucasus	7,284,547
Siberia	4,313,680
Central Asia	

BUSINESS PECULIARITIES.

The business peculiarities of the Russians betray their Asiatic origin. The universal system of "chaffering" is misleading to one not familiar with their habits. No Russian merchant, if even he be of the first guild, ever names at once the price at which he intends to buy or sell. Hence in dealing with them the stranger, who is unused to this practice and is accustomed to see fixed prices in all mercantile communities, is very apt to be taken in, to the surprise as well as to the marked profit of the Russian negotiator. In every large city or town the "Eastern Bazar" (an aggregation of small shops and open places) is a prominent feature. They are tenanted by small merchants or dealers, and it is in that locality that the system of bargaining holds high revel. You are asked \$2 for an article. If you decline and start to leave the shop you are at once asked, "What will you give?" Accustomed to this manner of dealing, you offer 50 cents, and are at once met with a counter offer of the article at \$1.50. Finally, much depending on the indifference manifested, the article is sold at \$1, or perhaps at your original offer of 50 cents.

Long credit between merchants of standing is the rule. A dealer buying a bill of goods as a rule gives no note until nine months have elapsed. At the end of nine months he gives his note or draft upon some banking-house payable at ninety days' sight. In the retail trade cash or its equivalent (thirty days) is almost an invariable rule. At the great Russian fair at Nijni-Novgorod merchants are found in great numbers paying for the goods purchased one year before and buying their stock on a twelve-months' credit.

A great deal of money is thrown away annually by American houses sending out their price-lists and illustrated catalogues. I have endeavored to represent to correspondents the fatuity of such efforts.

There is a great opening in Russia for American goods. They occupy a high vantage ground among consumers and buyers, but as a rule the Russians want to see samples of the goods or the goods themselves. They wish to bargain for them. They are slow to adopt any change, and unless they are convinced by ocular demonstration that the article offered them possesses great advantages they will not take it up. If several houses engaged in different lines of goods would combine and send some energetic pushing representative to open a store or warehouse in Moscow, Riga, or any other center of trade, at the same time supplying him with samples of their product, the cost to either of them would not be very great, and the trade which would flow from such an experiment would surprise the originators of the enterprise. There are vast probabilities for the extension and development of American trade in Russia. There is no other country so sure of yielding a rich and ahead

Russian merchants, no matter how able and honest they may be. "Drumming," to quote the American term, is foreign to their ideas, their training, their habits, their instincts. The work can be done only by men of American business training who are on the spot. These conditions being fulfilled a vast trade with a grand empire, despite the high import duties, is opened up for our merchants and manufacturers.

APPENDIX.

The Russian central statistical committee, under the direction of Mr. N. Troïnitsky, has issued a complete work giving the general movement of population, manufactures, and commerce in Russia in Europe and Poland for the years 1884 and 1885.

It is too voluminous a work to translate in its entirety, and I therefore beg to forward, as supplementary to my report upon the trade and industries of Russia, a condensed statement of the main facts. Any apparent differences in detail from former reports sent to the Department must be attributed to fundamental errors originating with the Russian bureau of statistics, as every table in each report is taken from published records. As all statistical information is provided by the Government, the figures given below are supposed to be not only the latest but the most authentic, and it is believed that all errors arising from incomplete data, as well as from clerical errors, have been eliminated or corrected.

The population of the Empire at this date is estimated at 109,000,000 inhabitants of both sexes, the males being largely in excess of the females. The number of inhabitants to the square verst (four-ninths of a square mile) is as follows: 19.3 inhabitants for the fifty provinces of Russia in Europe; 71.4 for Poland; 17.9 for the Caucasus; 0.4 for Siberia; 1.8 for Central Asia, and 7.6 for Finland.

There are 1,300 towns and 324,000 other inhabited localities. There are 4 cities having over 200,000 inhabitants, 9 with over 100,000, and 23 towns having over 50,000 inhabitants.

The annual number of births for the years 1882-'85 was 3,400,000, of which 2.6 per cent. were illegitimate; the number of deaths 2,500,000. The excess of births over deaths was consequently about 900,000.

In 1885 there were 867 hospitals in cities and towns, containing 47,000 beds, and 800 rural hospitals, with 11,000 beds. The lunatic asylums (77 in number, with 15,000 pensioners) are not comprised in these figures. The mortality in these latter institutions was 11 per cent. of the inmates. There were 2,145 apothecaries, who have furnished medicines costing over \$5,000,000 (representing 13,500,000 doctors' prescriptions), so that the average expense of this service per capita was \$5.70; the average price of each prescription being 38 cents. Over 11,000,000 patients applied for medical aid.

Typhus fever holds the first place among infectious diseases — there being in one year 162,000 cases, with 10 per cent mortality. The maximum of mortality resulted from diphtheria (35 per cent.) and hydrophobia (52 per cent.); but these sanitary statistics include only Russia in Europe and Poland, and, the statistics being very incomplete, the above figures are compiled solely from registered cases.

Of the total number (46,264) of violent and sudden deaths, 35,000 were males, showing that men are three times more exposed to accidents than women. In cases of suicides the percentage is still more desirable; out of 2,661 suicides only 636 were women.

One million foreigners entered Russia in 1885, of which 733,000 were men. During the same year 670,000 males left Russia out of a total of 921,500. For every 100 males entering 92.9 per cent. have emigrated; for 100 foreigners arriving 81.7 per cent. have departed. The number of travelers and tourists entering Russia holding passports was 321,000, of which 61,000 were Russians. Among the departures holding passports (272,000) 71,000 were Russians; all the others had tickets of short duration. On January 1, 1886, the number of prisoners of all classes amounted to 101,000, of which 8,000 were women. The number among these prisoners requiring medical treatment during the year 1885 was 78,000, and the number of deaths 2,699.

Out of 853,000 young men arriving at the age subject to military duty only 228,000 (of which 74 per cent. were of Russian nationality) were enlisted. The number of those rejected for physical disability and diseases was 62,000. Among those selected for the army 26.6 per cent. had passed through schools of education and 29.7 per cent. of these conscripts were married.

The 52,000 fires which took place during the year occasioned a loss of \$43,500,000 and 1,129 deaths. Seventeen fire insurance companies, with a capital of \$13,000,000, constitute the only protection against losses of this character. The total sum of insurance effected for the year amounted to \$2,754,000,000. The said companies have paid losses during the year amounting to \$12,000,000. To this sum must be added \$7,750,000 paid by the mutual insurance companies of the "zemstvos," or provincial municipal bodies.

The production of 83,182 manufacturing establishments, with 1,100,000 laborers, was valued at \$653,500,000. The average product per laborer for the year in the fifty provinces of Russia in Europe was \$550, and in Poland \$650. The Russian factories employ, on an average, 16 laborers in each manufactory; the Polish factories only 7, which indicates that manual labor

supplied 91,000,000 gallons of beer. There were 5,587 depots selling alcohol wholesale, and 556 selling beer.

There were 132,000 retail establishments selling brandy and vodka, and 7,734 selling beer.

The number of sugar refineries was 245, with a production of 765,320,000 pounds of sugar.

Tobacco was cultivated on an area of 167,000 acres, which produced 115,200,000 pounds of tobacco, turned over to 394 factories. Deducting 9,000,000 pounds for export there still remained for consumption 1.14 pounds per inhabitant.

The receipts of the state amounted to \$418,500,000, of which only \$90,000,000 arose from direct taxes. The debt of the state was \$2,325,000,000, with annual payments for interest and sinking fund, amounting to \$131,000,000, giving as a result for each inhabitant \$3.98 income, \$21.88 debt, and \$1.23 interest and sinking fund.

The operations of the Bank of Russia amounted to \$228,250,000, those of the rural banks to \$12,000,000, borrowed by the peasants for the acquisition of 1,570,000 acres of land. The free serfs have bought 92,000,000 acres of land for the sum of \$428,500,000. The municipal receipts in 1870 were \$8,400,000. In 1884 they were \$21,000,000. The expenses during the same time rose from \$9,500,000 to \$23,000,000. Consequently the receipts and expenses have been multiplied two and one-half times. The zemstvos have received \$20,000,000 (instead of \$31,350,000), and have spent \$19,000,000. The greatest expenditures were as follows: Sanitary purposes or public health, 22.7 per cent; public instruction, 16.6 per cent; the maintenance of public buildings, 14.7 per cent; local administration, 13.4 per cent. The peasants spent in 1881 \$7,400,000 for the bailiwick and \$8,700,000 for the villages. The capital invested in railways amounted in 1885 to \$1,400,000,000. The average gross receipts for three years (1883-'85) has been \$165,500,000, the expenses \$72,000,000, leaving a net income of \$43,700,000 for interest and dividends. The extension of postal routes was 112,000 miles, and 17,000 men were employed at 4,830 offices. The number of postal missives was 303,000,000. The revenue from postage-stamps was \$4,000,000. The total receipts of the post were \$8,300,000. The total expenses of the post were \$8,700,000. The number of telegrams sent reached 11,000,000. There were only 3,060 subscribers to the telephone system.

The commercial fleet was composed of 2,992 vessels, of which 360 were steamers. These vessels were distributed as follows: 687 in the Baltic; 246 in the White Sea; 732 in the Black Sea; 517 in the Sea of Azov; 789 in the Caspian, and 21 in the Pacific. During the period of 1882-'86 there was an annual export of \$268,350,000, and imports to \$227,350,000, over the European frontier, showing that for every \$50 exported there was an import valued at \$42.50.

The number of establishments for public instruction amounted to 41,492, with 2,500,000 scholars, of which 639,000 were females. There were 8 universities with 13,000 students; 476 schools for girls, with 97,500 scholars, and 561 schools for boys, with 131,000 scholars. There were 402 special schools for men, with 56,000 scholars, and 41 for women, with 3,500 scholars; 40,010 preliminary schools, with 2,204,000 scholars of both sexes.

The fifty provinces of Russia in Europe contain 38,531 orthodox churches. The Russian clergy was composed of 44,559 active priests and 6,442 monks. There were 1,287 Catholic churches, with 1,453 officiating priests, while there were only 708 Protestant churches, with 471 pastors; 37 Armenian churches of the Gregorian rite, with 84 priests; 349 synagogues; and 3,957 mosques, with 7,877 servitors.

In addition to the above statistics there were in the same fifty provinces of Russia in Europe 474 typographic offices, 270 lithographic offices, 425 typo-lithographic establishments, 710 photographic establishments, 509 circulating libraries, and 545 national libraries.

The crops of the fifty provinces of Russia in Europe showed 1,728,000,000, bushels of cereals of all kind, of which 70.5 per cent. were produced by peasant labor. Deducting all exports, and making a proper allowance for seed, there remained 13 bushels per capita for consumption.—ST. PETERSBURG, *May 14, 1888.*

CHARLTON H. WAY.

Consul-General.

RESOURCES AND TRADE RELATIONS OF JAPAN.

In the preparation of this report I have carefully consulted every trustworthy source of information at my command. Whenever I have thought that the language of others would convey a more intelligent knowledge of the subjects I have adopted it, and acknowledge in the outset my indebtedness and obligation.*

JAPAN.

The Empire of Japan extends from 24° to 50° 41' north latitude, and from 124° to 156° 38' east longitude. Exclusive of the four main islands it embraces over three thousand smaller ones. Many of these are mere barren rocks, uninhabited and uncultivated. Others, again, are of considerable size and exceedingly fertile, particularly the islets in the "inland sea" lying between the main island on the north and the islands of Shikoku and Kiusiu

Yezo, the most northerly and least developed. The former three islands are subdivided into eight large roads containing 66 provinces, and the latter (Yezo) is divided into 11 provinces. Administratively there exists a division into 3 fu and 41 ken, or provinces.

AREA AND POPULATION.

The total area of Japan is 148,456 square miles, with a population of 37,868,987, viz, 19,157,872 males and 18,711,110 females. The number of houses is 7,710,221, and the population is divided as follows: Imperial family, 38; nobles, 3,350; knights, formerly retainers of the daimios, 1,931,204; common people, 35,934,395.

The number of foreigners residing in Japan, exclusive of Chinese, is about 2,100.

The following table gives the statistics of the births and deaths for the five years 1880-'84:

Year.	Births.	Deaths.	Excess of Births.
1880.....	883,584	603,055	208,529
1881.....	941,344	686,064	255,279
1882.....	922,715	668,342	254,373
1883.....	1,104,989	676,369	328,620
1884.....	975,252	705,226	270,026

SYSTEM OF GOVERNMENT

Is that of an absolute monarchy. The sovereign bears the name of Supreme Lord, or Emperor; but the appellation by which he is generally known in foreign countries is the ancient title of Mikado. The exercise of the power of the Emperor is now controlled to a great extent by public opinion.

The Emperor himself, in 1875, when the senate and supreme judicial tribunal were founded, solemnly declared his earnest desire to have a constitutional system of government. Since that time the tendency has been toward such a system of government. The great council, in which the Emperor himself presides (though his place is taken by the minister president on ordinary occasions), is the supreme executive as well as the highest legislative body. It is composed of the minister president, the minister of foreign affairs, the minister of the interior, the minister of finance, the minister of war, the minister of the navy, the minister of justice, the minister of education, the minister of agriculture and commerce, and the minister of communications. Besides these there is the minister of the imperial household. There is also a body of court counselors, which is called together on special occasions, and presided over by the keeper of the great and privy seal, to deliberate on important matters relating to the government.

The most important body in the Government is the senate, established in 1875. It deliberates on legislative matters, but its decisions are subject to confirmation by the cabinet and sanction by the Emperor.

The number of senators is unlimited. In 1886 there were sixty-nine. They are chosen from those who have rendered signal service to the state. Another body, council of state, created in 1881, has the function of initiating and framing bills and discussing matters transmitted by the executive department, subject to deliberation in the senate. It also hears and decides cases relating to administration. The local administration in the provinces is in the hands of governors—one of them residing in each of the forty-four districts (3 fu and 41 ken) into which Japan is divided. Each district is subdivided into cities (ku) and counties (gun), each with its chief magistrate who manages local affairs.

A system of justice based on modern jurisprudence has been established, and three hundred courts of various grades have been distributed over the country.

RELIGION.

The old edicts against Christianity are no longer in force. Although the present Emperor is favorable to the Shinto faith, religious worship is free in Japan. The religious beliefs of the Japanese people may be divided under two heads—the Shinto and the Buddhist. The former was the religion of the Japanese before the introduction of Buddhism in 552. It contains no moral code, and it has been asserted by a native writer of high authority on the subject that in Japan there was no necessity for any system of morals, as every Japanese acted right if he only consulted his heart. There are now in Japan about 15,000 Shinto priests. Buddhism, however, soon gained complete ascendancy, and notwithstanding the blow its progress received by the introduction of western civilization and the liberal policy of the Emperor, it numbers at present 75,000 priests. The progress of Christianity in Japan is shown by the following table:

	1885.	1886.
Number of missionaries	183	215
Organized churches.....	168	193
Churches wholly self-sustaining.....	57	64
Membership	11,678	14,710

In addition to the efforts being made by the missionaries to propagate the doctrines of Christianity through the influence of the Christian churches, they have established a number of schools for this purpose, which are largely attended, and the success of which appears from the following table:

	1885.	1886.
Total scholars.....	4,324	4,805
	150	230

Contributions by native Christians for the support of the above schools were, 1885, 24,144 yen; 1886, 26,866 yen.

EDUCATION

Is making greater progress than before the revolution which made Japan a monarchy. In order to facilitate the acquirement of foreign languages the Government has engaged many professors from eastern countries, and also sent, at the public expense, a large number of students to America and Europe. An association called the Romajikai, for promoting the adoption of the Roman alphabet in Japan, was formed in 1885, and is making progress. The following are the latest official educational statistics:

Schools.	Number.	Professors or teachers.			Students or pupils.		
		Male.	Female.	Total.	Male.	Female.	Total.
Elementary	29,233	92,706	6,410	97,316	2,219,375	1,013,851	3,233,226
High	142	1,083	50	1,133	15,100	590	15,690
Normal.....	65	661	53	714	6,375	859	7,270
Universities	1	104	.....	194	1,880	.....	1,880
Technical.....	103	583	.....	583	8,892	21	8,913
Others.....	1,326	1,927	286	2,213	47,434	10,572	58,006

Of the total universities and schools, 9 are maintained by the central Government, 29,008 by the local government, 1,853 by private funds. The school age is from six to fourteen years, and the average attendance, 3,129,073, or 50.76 per cent. Attendance has been made compulsory.

The publication and sale of books and newspapers in a country are indicative of its educational progress, and there were, during the past year, over 6,700 new books published in Japan, and more than 66,000 copies of newspapers published and sold. From late returns it appears that during the five years ending on December 31, 1885, the aggregate number of newspapers printed in Japan bore the following ratio per 1,000 of population: 1881, 49; 1882, 45; 1883, 42; 1884, 45; 1885, 51.

In connection with the subject of education the following table will show the freedom enjoyed by the press and public lecturers in Japan:

	Newspapers	
	Suspended.	Suppressed.
1881 .....	.....	.....
1882	58	.....
1883	70	12
1884	52	4
1885	38	4
.....	25	.....

During the current year there have been several suspensions, mostly of papers that have criticized the policy of the Government. In Japan, when assemblies or meetings are to be addressed on political subjects, the speaker is required to first submit a synopsis of his address.

the address any police officer present has the right to stop the speaker and forbid him to proceed. The following table will show how this power has been exercised:

	Subjects allowed.	Pro- hibited.	Number of meetings.	Speakers.	Meetings dis- persed.	Speeches pro- hibited.
1881.....	12,010				113	40
1882.....	13,212	1,082	1,817	7,675	282	52
1883.....	7,199	748	1,037	4,692	139	56
1884.....	4,552	694	681	2,396	117	45
1885.....	2,845	270	444	1,263	66	1

FINANCES.

In connection with the subjects referred to under the general heading—Japan—there are none more clearly allied with the Government than the subject of finance. Much has been done during the last few years to improve the condition of the finances of Japan. The redemption of paper money alone, at one time as unstable as water, which has taken place, has restored the credit of the Government. It must be remembered that until the restoration of the present Government, nineteen years ago, feudalism prevailed in Japan, and about three hundred different lords held possession of the soil of the country, exercising therein their territorial rights.

The result of this was that they ruled the land, each of them with his own autonomic government, following his own bent in his particular locality. More especially were there confusion and obscurity in financial matters. Just after the restoration, when the central Government became established and undertook the general direction of every kind of state affairs, the basis of a financial policy was laid down. But in consequence of the war that raged in the Empire the finances were thrown into a state of the utmost embarrassment, and the Government had no resource than to issue paper currency in order to meet the great calls which suddenly devolved upon it. At first the amount of this paper money issued was only 48,000,000 yen, but both internal and external necessities have jointly compelled the Government to increase the amount of issue to 120,927,000 yen. The Government, however, has since made every possible effort to reduce the amount of this issue, the result of which is that the amount of paper money was in the eighteenth fiscal year (July 1, 1885, to March, 1886) decreased to 76,934,727 yen. The great fluctuations in the value of the satsu in the intervening space are well known in business circles.

There are in Japan no less than one hundred and thirty-eight national

general regulation of the

this was to confine the circulation of money to within very narrow limits, thereby causing the rate of interest to rise and produce most unfavorable effects upon the financial condition of the people. Consequently, in 1882, the Bank of Japan was established, after careful examination of the different banking systems of Europe and America, with the view of making it the focus of all the different banks throughout the whole Empire by entering into regular relations and correspondence with each of them. Thus the Bank of Japan opened the way of communication between all other banks, and has proved to be a smooth-working machinery for putting money into circulation wherever wanted. This Bank of Japan is a chartered stock company with a capital of 10,000,000 yen. It is divided into five million shares, each of 200 yen. Its business is to discount promissory notes in order to promote the circulation of money; to lend money; to act as the disbursing agent of the national treasury; to discount foreign bills of exchange, a method which is employed for paying the expenses of materials purchased abroad, expenses of legations, etc.; and to transact the business connected with the purchase and sale of gold and silver bullion. The Bank of Japan has to fulfill a great duty to both the Government and the public, and by way of compensation the Government has vested the bank with the privilege of issuing its notes payable in silver on demand, a privilege which naturally has a good effect on it as a dividend-paying establishment. These notes were issued in May, 1885, and it is the intention of the Government, after the redemption of all its paper currency and different national-bank notes, to allow the notes of the Bank of Japan alone to circulate, much in the same manner as Bank of England notes in England. The bank holds a reserve in gold and silver bullion to the amount of notes so issued.

The aggregate capital of all the national banks in the Empire is 44,456,100 yen. They had to purchase Government bonds to the extent of 8 per cent. of their capital and deposit them in the finance department as security for the bank-notes to be issued in their names. The highest amount of the issue of these notes accrued in March, 1880, and reached the sum of 34,429,635 yen. For the redemption of the bank-notes no method was established, but at the time the Government decided, in 1882, on plans for redeeming all their paper currency, the withdrawal of bank-notes was at the same time determined in the same way. In the first place, the regulation for national banks underwent a modification, by which they have to deposit a certain amount of their reserve fund with the Bank of Japan, to enable the latter to undertake the task of withdrawing the bank-notes. The Bank of Japan has then to purchase Government bonds with the deposit of the reserve fund of the national banks, and to set aside the interest produced from the bonds to meet the requirements for redemption of the bank-notes. Secondly, the national banks have, according to the amount of bank-notes each of them have issued, to deduct $2\frac{1}{2}$ per cent. *of the*

reserve fund. In case any bond so purchased in the above two instances is drawn for redemption, the Bank of Japan, with the funds received for the bonds drawn and paid for, shall again purchase bonds so as to make good the deficiency, the interest on which shall also be reserved for the above-mentioned purpose. Should any bank-note still remain in circulation after the lapse of fifteen years from the time this plan has been set in motion, then the Bank of Japan shall undertake itself to dispose of the deposited bond, the proceeds of which shall be appropriated to the withdrawal of such bank-notes from circulation.

Since the above plan was actually put in operation up to the end of the eighteenth fiscal year (March 31, 1886), the amount of bank-notes redeemed and withdrawn from circulation owing to bankruptcy is 4,382,203 yen in all; and, finally, the total amount of deposit in the savings-bank on July 1, 1885, was 8,142,409 yen, and on June 30, 1886, 23,103,226 yen, an increase of 14,960,817 yen.

MONEY.

The money in common use at the open ports of Japan and its United States equivalents, are: The yen or dollar of 100 sens is equal to about 80 cents in gold, though at this date it is not valued at more than 76 cents in gold. The gold yen, the unit of account, differs very slightly from the quantity of gold contained in the standard gold dollar of the United States. Much of the internal medium of exchange is paper currency, of which there are various denominations corresponding to those in coin. It is officially stated (November, 1886) to be at par. In the latter part of 1870 the Government established a mint at Osaka, where coins of gold, silver, and copper are manufactured. Gold coins consist of 20, 10, 5, 2, and 1 yen pieces. Of silver coinage there are 1 yen, 50, 20, 10, and 5 sen pieces. The "trade dollar," about equal to the Mexican dollar in weight and fineness, is also coined there. The copper coin consists of 2 sens, 1, one-half, and one-tenth (or rin) sen pieces, the last said to be the smallest coin in use. All the coins are circular in shape.

WEIGHTS AND MEASURES.

Kan = 1,000 momme = $8\frac{1}{4}$ pounds avoirdupois.

Shaku = 1 foot.

Ken = 6 shaku = 6 feet.

Chô = 60 ken = one-fifteenth mile.

Ri = 36 chô = 2.44 miles.

Chô, land measure, = $2\frac{1}{2}$ acres.

The metric system of weights and measures is growing into favor, and it is stated to be the intention of the Government to introduce it into Japan

military and agricultural capacity of Japan and the value of her principal products.

The following is the budget in yen for the year ending June:

Revenue.	Amount.	Expenditure.	Amount.
	<i>Yen.</i>		<i>Yen.</i>
Land tax.....	43,151,582	Public debt.....	20,000,000
Stamp duties	825,889	Civil list and appanages	2,340,000
Tax on products of Hokkaido.....	538,216	Cabinet.....	570,805
Excise	14,843,039	Ministry of foreign affairs	839,228
Tax on sauces	1,266,510	Ministry of the interior.....	8,385,892
Tax on tobacco.....	1,501,184	Ministry of finance.....	12,896,334
Customs.....	2,621,744	Ministry of war.....	12,000,000
Postage-stamps.....	2,301,399	Ministry of marine.....	5,293,464
Telegraphs	882,868	Ministry of justice	2,501,997
Other public works.....	1,413,168	Ministry of public instruction.....	858,326
Various taxes	5,349,816	Ministry of agriculture and commerce.....	870,296
Total.....	74,695,415	Ministry of post and telegraphs.....	3,668,357
		Senate.....	309,722
		Audit bureau	92,000
		Railway department	20,000
		Hokkaido	2,500,000
		Various.....	1,542,593
		Total.....	74,688,014

The public debt of Japan stood as follows in March, 1886:

	<i>Yen.</i>
Home debt with interest	230,004,935
Home debt without interest.....	12,966,567
Total home debt.....	242,971,502
Foreign debt.....	7,522,032
Total	250,493,534

About one-half of the home debt bears interest at 7 per cent. and the remainder from 4 to 10 per cent. More than half of this public debt was incurred by the former daimios, and was the result of their financial management previous to the change of fourteen years ago.

The plan adopted by the Japanese Government in 1878 for redeeming the national debt was as follows: An annual deduction from the revenue of a sum of 20,000,000 yen is employed in redeeming the paper currency and in paying both the principal and interest of domestic and foreign loans, and 20,000,000 yen of the reserved fund to be appropriated to the cancellation of various kinds of bonds, so that the interest saved upon such bonds may be employed in supplying deficiencies in the redemption fund.

ARMY.

Japan for military purposes is divided into six divisions, viz: Tokio, Sendai, Nagoya, Osaka, Hiroshima, and Kumamoto, in each of which there is a garrison.

in the country. The number of soldiers of the Imperial Guard, infantry, cavalry, artillery, and engineers serving in time of peace in these barracks is 5,520, and the number of soldiers of all branches serving in the above-mentioned six garrisons is 49,773. Besides these soldiers there are 1,805 in Tokio and 752 colonial soldiers in Hakkaido. The total number of soldiers for reserve service of the regular troops is 91,374, and that of the second reserve 32,837. The total number, therefore, of all the troops in the country is 124,211.

The officers and non-commissioned officers in command in time of peace number 11,515. For the instruction of these there are six military colleges or schools, viz: The Cadet Academy, the Toyama College, the Artillery College, the Military Medical School, School for Paymasters, and School for Arsenal Apprentices. Besides these there is the Kiodo-Dan, where non-commissioned officers are educated.

The number of students who have graduated or passed through these colleges and schools is 1,196, and that of those still studying in them is 3,172. The usual course is three years at the Cadet College. The total number of horses (Japanese ponies) in the army is 4,595, and these are distributed among the garrisons and colleges for various purposes. There is a special body of troops for training horses, and all army horses are trained by them. There are also various establishments where horses for military use are held.

The conscription law of Japan enacts that all Japanese males between seventeen and forty years of age are liable to duty in the military or naval service. In both services it is divided into three years in the first reserve, one year in the second reserve, and up to forty years of age in the militia. No one convicted of crime can enter either service.

NAVY.

The number of existing men-of-war is 25 in all, mounting 143 guns. The total number of men serving on them is 4,790, the largest number serving on one vessel being 365 and the least 55. The total number of horse-power of all the vessels is 34,386, the highest on one vessel being 7,500 and the least being 60. There are 7 kinds of vessels, viz: 3 cruisers, 1 frigate, 4 corvets, an ironclad, 7 sloops, a yacht, a dispatch-boat, 7 gun-boats, and 4 torpedo boats. The number of naval officers, including admirals, surgeons, and accountants, is 834; that of non-commissioned and petty officers is 1,696, and that of the men is 5,786. The total number in the navy is therefore 8,451 men. There are 4 naval establishments in the country, of which 2 are ship-yards, 1 is an arsenal, and 1 is a gunpowder manufactory. The total number of engineers and laborers in these establishments is 4,146.

of 150,000,000 yen from this source. Rice, therefore, occupies the most important place in the domestic trade of the Empire. Busying themselves with economical problems, which until recently received little attention in Japan, Japanese writers are beginning to inquire whether the staple is destined to permanently retain this leading position, or whether a change may be expected to take place in the agricultural programme of the people.

It is observed by the *Keizai Zasshi* that the annual increase in the production of rice is by no means commensurate with the corresponding growth of population. The statistics prepared by the geographical bureau show that in the first year of the *Euchô* era (A. D. 923) the total area of rice fields throughout the Empire was about 1,035,365 chô, or 2,688,400 acres approximately. The increase since that time is shown by the following table:

	Total increase. <i>Chô.</i>	Average annual increase. <i>Chô.</i>
923 to 1453.....	692,510	1,099
1453 to 1702.....	1,068,676	7,172
1768 to 1834.....	522,025	3,954
1834 to 1878.....	1,562,913	35,520

In the year 736 of the Japanese era the population of the Empire was estimated at 8,000,000. The rate of increase since that time is shown by the following table:

	Total increase. <i>Chô.</i>	Average annual increase. <i>Chô.</i>
736 to 1744.....	17,682,210	17,541
1744 to 1756.....	379,620	31,635
1756 to 1876.....	8,276,699	68,972
1876 to 1878.....	26,220	13,112

The two results are that in nine hundred and fifty-five years—between A. D. 924 and A. D. 1879—the aggregate increase in the area of land under rice cultivation was 3,846,125 chô, being an annual average rate of 11,936 chô yearly, while the total increase of population in eleven hundred and forty-two years—from A. D. 736 to A. D. 1878—was 26,364,749, or an annual average of 32,815. In other words, while the average annual increase of population has been over 4 per cent., that of the rice-producing area has been 1.143 per cent. The figures used should not be relied upon as entirely trustworthy, for some of them carry us back to remote feudal times when the compilation of statistics reflected the disturbances of the age. If, however, average be taken since the *Tempo* era (1830-'43), it appears that the average increases in the area of rice-growing land and in population were respectively 35,520 chô and 41,092 head. If we come closer to our own time and take the interval from 1879 to 1885, it is found that the average annual increase of cultivated land was 19,325 chô, while the average yearly addition to population was 25,665.

pace with the increase of population. According to the investigations conducted in the bureau of geography the total quantity of rice produced in the year 1702 was 25,840,000 koku, and in the year 1834 this total had increased to 30,500,000 koku. The last statistical report published by the Government states that the rice production of 1884 was 26,340,000 koku. The conclusion is that the quantity of home-grown rice available for the national consumption has at best remained stationary during the past half century, while the population has increased by about nine millions.

Raw silk is one of the most important of Japanese staple exports, and the returns are generally more remunerative than those derived from any other article exported.

The total value of silk produced last year is estimated at 35,000 piculs (133 pounds per picul). Of this amount the exports were valued at 17,321,361 yen. Greater importance is now being attached to silk culture and some of the native press advocate that in many instances the existing rice fields would be a source of greater profit if planted with the mulberry trees, and this is being done. Formerly the only localities in which sericulture was carried on were Shiushu, Joshu, and Oshu, but the industry is now being extended to other places. The sprouts of mulberry trees which have been planted this year alone number several million, but the process of manufacture is not keeping pace with the extension of the area. By the hand process at present so extensively followed, the twisting of the silk is at times a delicate matter and frequently produces that inequality in the denier which tends to deteriorate the value of the silk. Machinery would obviate all this at once, but the custom of generations stands in the way and also the fact that many farmers are silk manufacturers. The rearing of cocoons is the farmer's business, and the manufacture of the silk should belong to others. Instead, however, of the labor being thus divided, the people of old sericultural districts, following in the footsteps of their ancestors, think that a man should make the silk from cocoons reared by himself. They resent the interference of other persons or the adoption of fresh ideas, though by reason of the antiquity and inefficiency of their tools and the consequent inferiority of the silk manufactured by them, the price obtained is barely sufficient to pay for the cost of production. The amount sold to foreign firms from June, 1886, to May of this year, reached 39,217 bales, not taking into account that which was exported direct; of this amount the filatures only numbered 16,931 bales. If those engaged in the industry would divide the work as above indicated there can be no doubt but that the profits upon the silk exported would be much greater. Such a division of labor must sooner or later take place, and when it does a valuable market for machinery will be opened.

The following table will show the annual production of silk for the past thirteen years by the countries in which it is most extensively cultivated:

Annual production of silk.

[Approximate résumé, calculated in bales of 47 kilos.]

Crops.	1874-'75.	1875-'76.	1876-'77.	1877-'78.	1878-'79.	1879-'80.	1880-'81.
France	15,600	15,700	3,300	16,500	13,000	8,100	11,300
Italy	60,900	55,500	21,100	32,100	56,800	28,300	64,000
Spain	3,000	2,500	1,900	1,500	1,300	900	1,500
Turkey and Greece	3,700	3,100	2,400	1,700	1,600	2,300	2,400
Broussa and Syria	8,000	6,100	4,800	4,600	5,300	5,100	6,100
Georgia and Persia.....	8,500	6,600	6,600	6,600	4,300	6,300	7,100
Total for Europe and Levant..	99,700	89,500	40,100	63,000	82,300	51,000	92,400
China *.....	72,100	70,800	80,400	53,100	62,100	68,400	85,500
Canton †.....	17,700	21,500	22,000	18,100	17,900	22,400	15,600
Japan ‡.....	13,100	14,900	24,000	23,900	21,500	20,400	24,800
India.....	12,600	8,200	12,100	14,300	7,700	12,300	10,400
Grand total.....	215,200	204,900	178,600	172,400	191,500	174,500	228,700

Crops.	1881-'82.	1882-'83.	1883-'84.	1884-'85.	1885-'86.	1886-'87.
France	16,000	16,500	13,000	10,400	11,400	14,400
Italy	66,300	53,100	71,900	63,000	55,900	72,500
Spain.....	1,800	2,400	2,100	1,900	1,400	1,200
Turkey and Greece	2,900	2,200	2,800	2,500	2,600	3,100
Broussa and Syria.....	5,100	7,000	10,000	8,900	9,200	9,400
Georgia and Persia.....	5,400	5,400	5,400	4,300	1,600	2,000
Total for Europe and Levant	97,500	86,600	105,200	91,000	82,100	102,600
China *.....	59,500	56,600	41,500	59,600	58,200	58,000
Canton †.....	22,900	22,500	24,600	14,500	15,700	23,700
Japan ‡.....	25,700	31,000	35,500	33,000	32,600	33,500
India.....	8,200	9,700	11,400	18,300	16,200	16,600
Grand total.....	213,000	202,600	218,200	216,400	204,300	234,400

* These figures indicate the production destined for exportation each season—that is to say, the purchasers and stocks to the 1st June, after deducting the old stocks brought forward.

† Including the export by way of Bombay.

‡ The large Japanese bales are here reduced to 47 kilos.

TEA.

It is difficult to ascertain the number of pounds of tea produced in Japan, but it may be approximately estimated at 70,000,000 pounds. The export of tea from Japan during the last seven years has been :

	Pounds.		Pounds.
1880	40,436,877	1884	35,766,600
1881	38,483,854	1885	41,244,718
1882	37,734,845	1886	47,595,651
1883	37,146,914		

These figures show that the export for 1886 exceed that of any previous year in the current decade by over 6,000,000 pounds and 14

The average price of good medium tea is from \$17 to \$19 per picul of 133 pounds.

In addition to the above products there were produced in 1884, 29,595,000 bushels of barley and 31,253,620 bushels of beans. The estimates for the year show at the time there were 1,093,471 cattle and 1,564,993 horses in Japan.

RAILWAYS.

The lines of railways open are :

Tokio to Yokohama, 18 miles, opened 1872, cost 2,855,732 yen ; Kobe to Otsu, 58 miles, opened 1874 to Osaka, 1876 to Kioto, 1880 to Otsu, cost 7,763,500 yen ; Tsuruga to Ogaki, 49 miles, opened 1882 to Yanagasi and Nagahama,* 1883 to Sekigahara, 1885 to Ogaki, cost 2,981,102 yen ; Tokio to Mayebashi, 68 miles, 1883 to Honjo, 1884 to Takaski and Mayebashi, 2,323,302 yen ; Shinagawa to Akabane, 13 miles, opened 1885 ; Omiya to Utsunomiya, 50 miles, opened 1884, cost 502,216 yen † ; Takasaki to Yokogawa, 18 miles, opened 1884, cost 350,325 yen ; Handa to Nagoya (including extension to Kiyosu), 30 miles, opened 1885, cost at present 897,912 yen ; Naoetsu to Sekigawa, 18 miles, opened 1886, cost at present 237,497 yen.

The net traffic receipts as far as ascertainable have been :

Tokio to Yokohama, 1883, 374,324 yen, 13.1 yen profit ; 1884, 353,122 yen, 12.4 yen profit ; 1885 ‡, 231,558 yen, 8.1 yen profit.

Kobe to Otsu, 1883, 520,105 yen, 6.6 yen profit ; 1884, 388,322 yen, 5 yen profit ; 1885 §, 212,045 yen, 2.7 yen profit.

Tsuruga to Ogaki, 1883, 31,445 yen, 1 yen profit ; 1884, 3,520 yen, 0.1 yen profit ; 1884 ||, 7,332 yen, 0.2 yen profit.

The following lines are under construction or in contemplation :

Between Ogaki and Kiyosu, about 10 miles ; between Yokogawa and Sekiyama, about 80 miles ; between Yokohama and Nagoya, about 120 miles ; between Nagawama and Ishitashi, about 40 miles ; between Utsunomiya and Sendai, about 150 miles ; between Sendai to the port of Shiogama, 10 miles.

TELEGRAPHS.

Since the first establishment of telegraphs in 1869 up to March 31, 1886, the total expenditure for construction, maintenance, and all other expenses has been 10,507,507 yen, and the total revenue from all sources has been 8,097,347 yen. From this it will be noticed that the telegraph department

laid out on construction, etc. That could

amply covered expenditure with the exception of special construction, all outlay for which should be placed to capital account, for example :

	1882.	1883.	1884.
	<i>Yen.</i>	<i>Yen.</i>	<i>Yen.</i>
Receipts.....	1,012,144	891,163	907,067
Expenditures.....	921,602	817,685	845,912
Surplus.....	90,541	73,477	61,155

All the principal towns and places are in connection with Tokio and Osaka, with central stations in these two cities. Between Nagasaki and Shanghai and Wladiwostock cables have been laid, and Nagasaki is in direct communication with Yokohama (800 English miles) by cable, so that all international messages can be transmitted without delay. Among other places Osaka, Kioto, Kobé, Shimonoseki, Nagasaki, Nagoya, Yokohama, Kanagawa, Niigata, Sendai, and Hakodate are most important and busy circuits, requiring the fitting of duplex Morse instruments. Morse ink-writers, with polarized relay, are exclusively used in all the stations, and No. 8 B. W. G. galvanized iron wire is generally employed for the lines. It must be remembered that the construction of telegraph lines is rather difficult in Japan on account of the nature of the land, the greater part of it being hilly and mountainous. There are no means of transporting timber and materials by either horses or carts. Moreover, in the plains dry river-beds of over 1,000 yards in breadth have to be crossed. The work in such places is generally very expensive and troublesome both for construction and maintenance. The country is divided into fifteen districts, each under a district engineer and three inspectors, and a district is subdivided into three sections. As a rule all newly erected poles are injected with sulphate of copper for their preservation. The poles mostly used are sugi (a kind of cedar tree), which is cheap and very suitable. It is obtainable in all parts of the country. Insulators employed on the lines are at present manufactured by Tukagawa, at Arita, near Nagasaki, the quality of porcelain produced from Arita being excellent. Lately many improvements have been made in manufacturing them. They are so good that direct working on some of the longest lines is practicable.

The revenue for the period from July 1, 1885, to March 31, 1886, was, inland traffic, 511,599 yen; international traffic, 54,329 yen; length of lines—telegraph, 2,272 ri; telephone, 93 ri; length of wires—telegraph, 6,163 ri; telephone, 128 ri.

The staff of all grades numbers 2,370 employés. Akin to telegraphs is the telephone, which was first introduced into the country in 1878 from America. In the same year a set of telephone instruments

telephones and microphones have been manufactured, and now nearly all the principal Government departments are connected by telephone lines.

All electrical instruments and necessary materials for the construction of the lines are manufactured in the workshop of the telegraph department. The principal instruments made are as follows: Morse instruments, duplex Morse instruments, Wheatstone's automatic transmitters and receivers, telephones, microphones, dynamo-electric machines, batteries, resistance coils, magnetic meters, etc. Attached to the department is a telegraph school, where operators for the telegraph stations are trained. It was established in the year 1871 under the direct supervision of the director-general of telegraphs. Up to the present the number of students trained in the school has been 1,334. The term of tuition is, on an average, one year, and for quite young students two years. Having finished their course of study the students have to serve the telegraph department for the term of five years.

TRADE RELATIONS.

The total value of the export trade of Japan for the year 1885 was \$37,137,335, while the imports amounted to \$29,356,967. In 1886 the exports amounted to \$48,870,471, and the imports to \$52,168,432, showing a total trade of \$101,038,903; while that for the previous year was only \$66,494,322.

The exports to, and the imports from, the principal countries, as compared with 1885, were as follows:

Countries.	Exports.		Imports.	
	1885.	1886.	1885.	1886.
United States and Canada.....	\$15,613,868	\$19,988,216	\$2,726,184	\$3,358,986
France	6,735,911	9,632,902	1,329,866	1,330,918
China	7,655,468	9,594,907	5,763,050	7,123,851
Great Britain	2,411,978	4,195,355	12,415,421	12,703,248
Germany	493,383	864,453	1,665,652	2,313,659
Corea	299,600	829,316	239,514	563,447
East Indies and Siam	492,083	649,143	3,396,964	3,561,319
Australia	284,235	469,914	71,321	80,485
Russia	246,291	231,695	.....	.....
Italy	120,593	181,200	95,998	119,557
Austria.....	24,607	156,315	.....	.....
Belgium .....	.....	.....	317,862	507,908
Switzerland.....	.....	.....	306,254	263,446

It will be seen that Great Britain exports more than any other nation in the world, and imports less than any nation of much commercial importance.

purchased from Japan in 1886 merchandise to the value of \$16,000,000, and sold to Japan only \$3,000,000, showing a balance on the debit side of her account of \$13,000,000.

The same table shows that France buys \$8,000,000 more than she sells Japan, while Germany, whose trade relations have just commenced, had a balance in her favor for 1886 of \$1,200,000. It may be noted in this connection that the aggregate purchases and sales by Great Britain do not exceed the purchases alone by the United States. This fact indicates clearly the commercial interest of the United States in Japan.

PETROLEUM.

The following tables in reference to the petroleum trade may be interesting in this connection:

Russian petroleum.— Total shipments of refined, crude, crude residuum, lubricating, and benzine.

	Gallons.
1886.....	377,006,120
1885.....	160,589,965
1884.....	132,574,100
1883.....	108,067,280
1882.....	72,136,695
Total.....	850,374,160

of which, by Caspian Sea to Russia and Persia, 616,768,285 gallons; by railroad to Batoum and intermediate points, 233,605,875 gallons.

Shipments, 1886.

	Gallons.
Via Caspian Sea to Russia and Persia.....	282,823,150
Railroad to Batoum and intermediate points.....	94,182,970
Total.....	377,006,120

United States petroleum.— Total shipments of crude, refined, and naphtha.

Gallons.	Gallons.
1886..... 395,363,788	1882..... 387,332,070
1885..... 370,850,375	1881..... 367,890,039
1884..... 384,521,437	1880..... 264,067,119
1883..... 420,958,900	1879..... 293,992,095

The rapid increase of the Russian petroleum trade should be carefully noted.

The following table shows the shipments from the United States to ports in the East Indies, Java, China, Japan, etc., in 1886, as compared with 1885:

Country.	1885.	1886.	Increase.	Decrease.
	Gallons.	Gallons.	Gallons.	Gallons.
Java.....	1,699,383	2,430,60,	731,224	
India.....	2,770,287			
China.....				

Total shipments to all ports for 1886, as compared with 1885: 1885, 10,518,634 gallons; 1886, 12,231,300 gallons; increase, 1,712,666 gallons.

REACHING OUT FOR ORIENTAL COMMERCE.

The nations of Europe have not been indifferent to the importance of Oriental commerce, and Japan is in regular communication with the outside world. The principal lines of steamers are—

French.—The Compagnie des Messageries Maritimes, mail service, semi-monthly; terminus at Marseilles. This line is extended to Havre and London.

English.—The Peninsular and Oriental Steam Navigation Company; terminus at London.

German.—The Norddeutscher Lloyd, mail service monthly; terminus at Bremen.

Japanese.—The Nippon Yusen Kaisha, mail service weekly; terminus at Shanghai. The steamers of this company are in connection with the Pacific Mail and Occidental and Oriental at Yokohama.

American.—Pacific Mail and Occidental and Oriental; terminus at San Francisco.

Merchandise can be shipped to any part of the world by the above line of steamers. A new line has recently come into existence, which has already commanded attention, and promises to be no inferior competitor. It now has three ships, with an aggregate gross tonnage of 9,371, running regularly from the principal ports in China and Japan to Vancouver, in the province of British Columbia. The city of Vancouver is also the terminus of the Canadian Pacific Railway, as it is the terminal port of the new line named. Last year a considerable quantity of tea was carried from this port to Port Moody in sailing-vessels, the number of pounds being estimated at 3,352,122. During the season of 1887 the steamers on the Vancouver line carried 4,855,634 pounds of tea from this port, which were taken from their warehouses at Vancouver and transported overland by the Canadian and Pacific Railway. The tea so shipped and carried would, in the absence of this line, have principally been shipped by the Pacific Mail and Occidental and Oriental steamships, landed in San Francisco, and transported overland by American railway companies.

The Pacific Mail and Occidental and Oriental Companies have no steamers touching at this port. Tea shipped from here by these lines is carried by other ships to Yokohama and then reshipped there.

The exports from Hiogo in 1886 were 145,848 tons; in 1887, 186,071 tons; an increase of 40,223 tons. Would it not be advisable for the Americans to take of their

The following extract from the London Times in reference to this new route has been copied in the English journals published in Japan and commended to the special attention of British residents in Japan:

The new route has been termed the "Empire route" by reason of the fact that it lies wholly within portions of the British Empire, except where it crosses the high seas. In this political respect it differs from the other three lines to the East. The Suez Canal, or "overland route," passes through the foreign states, France, Italy, and Egypt, or coasts along many more — France, Spain, Portugal, Morocco, Algiers, Egypt, and Arabia. The Cape route coasts along France, Spain, Portugal, and Morocco, and on past a chain of settlements on the islands and main-land of Western Africa belonging to the several European powers. The Cape Horn route follows along a similar track until it adds to the list the states of South America. These routes are thus dominated over great portions of their length by foreign, and therefore possibly hostile, states. But the Empire route passes out of the ports of the British Isles on to the open high sea of the North Atlantic and so to the British port of Halifax, whence the railway, wholly within British territory, carries the passenger to Vancouver and places him once again on the high sea till Australia and China are respectively reached. The advantages to British commerce of such a route in the event of hostilities with any foreign power are obvious. Among other strategical advantages of this route is the fact that at the three critical points of its course excellent steaming coal is found in great abundance. Close to Halifax, the Atlantic terminal port, and close both to Vancouver and to Sydney, two of the Pacific terminal ports, good coal is obtained. Along the rival routes coal has to be carried, at great expense, 3,000 miles to Port Said, 4,500 to Aden, and 6,500 to Colombo or the cape.

Many still live who recollect the strenuous endeavors of Lieutenant Waghorn to prove that via Egypt lay a shorter route to the East than via the Cape, but to the present generation the Suez route is a mere commonplace of every-day life. It has, however, required no such arduous work to explain to the public the advantages of the new westward-going overland route.

The physical facts of actual distances along the several routes are conclusive. They may be summarily tabulated as follows, in thousands of miles:

	Via Canada.	Via Suez.	Via the Cape.	Via Cape Horn.
England to Japan.....	9¼	13¾	15½	15½
England to Shanghai.....	10½	12½	14¼	16
England to Hong-Kong.....	11	11	13½	16
England to Singapore.....	12½	9½	12¼	16¼
England to Brisbane.....	11½	12¼	14¼	13¾
England to Sydney.....	12	12	13¾	12¾
England to Auckland.....	12	12	14	11½

* * * * *

The Canadian route possesses four features of superiority over any other so far as saving of time is concerned. First, the route follows, as it were, a great circle, or, in other words, travels at latitudes where degrees of longitude are shortest; secondly, the seas crossed are cool, a matter of immense advantage to marine engineers as well as to passengers, and they are for the most part free from monsoons and tropical cyclones; thirdly, 2,500 miles of the route consist of a comparatively direct and easily-worked line of railway; and, fourthly, the sea courses are direct and do not have to follow the sinuosities of coast lines or encounter the dangers of coastwise navigation.

has just been awarded to the Peninsula and Oriental Company to provide mail communications with the far East. This is intended to suffice for the present traffic, but if we are to judge of the future by the past we may see in the records of the last twenty-five years that the growth of the trade of the United Kingdom with trans-Pacific ports is such as to foretell at least a duplication in value during the ensuing quarter of a century, which in these days of trade depression is a prospect carefully to be fostered. The following are the records of trade (in millions sterling):

Between the United Kingdom and—	In the year 1860.	In the year 1880.	Estimate for 1910.
Australasia.....	17	51	133
Straits Settlements	3	7	16.5
Java, Philippines, etc.....	3	7	16.5
Hong-Kong and China.....	15	20	26.5
Japan.....	.2	3	4.5
Total.....	38.2	88	217

There are other signs of a great expansion and growth of this trade during the next quarter of a century. It is considered as beyond doubt that China, with her 400,000,000 of people, will open herself to Europe by means of railways and telegraphs. France is certainly lavishing money on her newly-acquired territories in Tonquin; New Guinea, Borneo, and many smaller islands are coming under the subjection of European powers, and will, without doubt, swell the rapidly growing totals of trade in these Eastern seas.

The Atlantic link of the chain it is proposed to provide by a line of first-class high speed steamers—to be subsidized by the Canadian government. It will be possible to use Quebec as a summer and Halifax as a winter port. The latter is the only deep water port on the coast, and this is a very special advantage on a coast where fogs prevail. It is possible by free use of the lead to work into Halifax in the densest fog, and, at all events, immediately the fog lifts entry is certain. In New York, on the contrary, the shoals about the bar render navigation in a fog impracticable, and when the fog lifts vessels can not enter unless it also happens to be high water at the time. Halifax is only 2,400 miles from England, and is therefore nearly two days nearer than New York. The Canadian government is acting with wisdom as well as enterprise in this endeavor to make Halifax the great port of the continent, and certainly the Atlantic port of a through route to the East. It is expected that the new fast steamers will make the passage in about five days—making through connection between Liverpool and Vancouver within eleven days.

Thus far the route is already complete, but on the express stipulation that the continuation of the route across the Pacific be arranged for. So far as the route to New Zealand and Australia is concerned, it is hoped that Canada will be able to combine with the governments of those colonies, and in two years' time, when the existing contracts lapse, divert to the Canadian route a portion of the subsidies now paid for the San Francisco service. Then, too, Queensland now pays £55,000 for a forty-four days' service via Torres Straits, whereas the Canadian route will offer a thirty days' service for about half such a sum, seeing that a total of £50,000 from all the Australian colonies would probably suffice to secure, with the Canadian contributions, a thoroughly efficient service.

The China service stands on a different footing, because there is no group of wealthy colonies desiring to establish such a service; whereas the main benefits of the through

The Imperial Government could not shut its eyes to the obvious signs that a mail service by this route would become a commercial necessity of the near future, and on the 19th of October, 1885, a notice was issued by the post-office calling for tenders for a fortnightly mail service, to commence in February, 1888, to run between Vancouver and Hong-Kong. Two tenders were sent in, and one of these has since been placed before the Government in a somewhat amended form. It is proposed to run a service of steamers, to be built according to admiralty requirements, to be capable of steaming more than 16 knots, and to be available in war time for service as armed cruisers or transports; the service to be $\frac{1}{4}$ -knot service, to carry mails free of all further charges, troops at low rates, and war materials and Government stores across the continent at absolute cost.

* * * * *

Wintry frosts can be mitigated on the Red River at least as skillfully as summer heat on the Red Sea. Charges can be reduced to the lowest level which will leave a profit. Harbors and their staff and apparatus can be improved and perfected. Fleets of Atlantic and Pacific steamers can be launched as luxurious as those of the Peninsular and Oriental Company, without the necessity of consulting the shallowness of a canal. The Canadian Pacific, with the treasury of the Dominion to back it, and sufficient assistance from this side to indicate sympathy, can exert its energies as fruitfully as any rival enterprises in smoothing away obstructions. At the end, and as a sort of fairy godmother's gift, it always has at its disposal the indisputable geographical fact that it is absolutely the nearest way to half a dozen of the most remunerative markets for British trade. Its advocates at a distance have but to remember to urge this, and its Canadian owners so far to forget it as to act as if their lines had to make up for natural drawbacks instead of sleeping upon natural excellencies. In that case its 9,000 miles to Japan against the 13,000 by the canal, and its 10 to Shanghai against 12, will be as persuasive, all in good time, to British trade as are the reasons to a Londoner for traveling to Brighton by the main line, and by Horsham.

Referring to the same subject, the Jiji Shimpō, a native journal, has the following to say:

The British Government has proposed to the other powers that the Suez Canal should be declared neutral, but other Governments, especially the French, do not see their way to agree to this proposition, and so the matter remains undecided. But even though all were to consent, and the canal were to be declared neutral, it must be evident that in time of emergency any one of the great powers whose shores are washed by the Mediterranean might seize it with ease by the mere dispatching of a squadron, and thus England's communication with the East would be broken. At present Egypt may be said to occupy a position of dependency on England, but more than one state is gathering itself together for the encounter. France especially, whose navy is not by any means insignificant, would be able to make it hard for England to preserve the neutrality of the canal in time of war. It is not cause for wonder then that England should look about her for some other route to the East, by which she may carry on her trade without interruption either in peace or war. And such a route she has obtained in the Vancouver line. If we take it that Hong-Kong is the center of England's Eastern commerce, we shall find that the distance via Calcutta to the center is 10,657 miles, whereas from Liverpool via Vancouver it is only 9,962 miles, showing a difference of 695 miles in favor of the latter route. Even assuming, however, that the distances were exactly the same, there would still remain with the Vancouver line the advantage that it is not liable to interruption in time of war. We find further that the voyage to Hong-Kong through the Suez Canal occupies fifty days, while the other route can be covered in four weeks, the time being reduced in the latter case by about half. In September last the British Government promised to grant an annual subsidy to the Canadian Pacific.

yet there is not wanting another point of view from which we can not look at the question without feeling that somehow an enemy has drawn a step nearer to our gates. England has at present only one Hong-Kong in the East, and the opinion is generally entertained among her people that as the tendency of her Eastern trade is toward the eastward, another post to the east of Hong-Kong ought to be obtained. When, therefore, England in April, 1885, suddenly occupied Port Hamilton, this fact occurred to our mind in connection with her action; but to our surprise she evacuated the post last year, leaving us wrapped in the mistiest doubt as to her intentions. The opening of the Canadian Pacific line, however, recalls to our mind the former hypothesis, and causes us to speculate whether now her desire and intention are to acquire a good position nearer to herself which shall form the center of her trade in the East. It does not require a vivid imagination to conjecture that ere long politics in the East will be subjected to significant movements. Hitherto any action taken by England to the eastward of Hong-Kong was just so much the more distant from London. Now the contrary is the case. The farther the center of English trade in the East is moved eastward the nearer it is to England. Yokohama was farther from England than our chief port is now by just the distance between Yokohama and Hong-Kong. Yokohama is now 1,356 miles nearer to England than Hong-Kong. The workings of nature are not infrequently interfered with by the hand of man, but we can not recall any instance in which geographical conditions have been so completely reversed. In effect we have been moved 1,300 miles away from Hong-Kong, a fact which all who are interested in commerce in the East would do well to ponder over and rule their actions by. The opening of the Canadian Pacific route will entail the necessity of strengthening the British Pacific squadron, and by this measure the power of England in the East will be greatly increased and rendered capable of actions which may surprise many people.

INDUSTRIES.

The cotton-spinning mills in Japan number 21, although only 19 are in working order at present. According to official returns the following is the number of spindles, material employed, etc., in September last:

Number of spindles	71,520
Amount of ginned cotton used.....me...	117,674
Amount of rolls manufactured.....me...	101,836,360
Amount of coal consumed.....kin...	1,836,111
Number of workmen	24,700
Number of work-women.....	35,623
Average price of cotton per 48 kwamme (English No. 16, domestic juban)....yen....	103.09½

The latest returns (1884) of the department of agriculture and commerce show that there were 1,185 silk manufactories in Japan, employing 4,158 men and 40,138 women. Of the manufactories 496 were in Nagans prefecture, province of Shinshin, and 255 in the Gifu prefecture, province of Mino.

As regards the rates of wages, the following table may be accepted as approximately correct:

	Cents per day.
Carpenters	40 to 60
Plasters	45 to 50
Plasterers	65 to 75

	Cents per day.
Stone-cutters.....	60 to 70
Blacksmiths.....	40 to 50
Painters.....	25 to 35
Coolies.....	20 to 30
Gardeners	25 to 50

Up-country unskilled labor is obtainable at from 5 to 10 cents a day. Artisans obtain from 20 to 30 cents.

The usual hours of labor are from 7 a. m. to 6 p. m. in summer, and from 7 a. m. to 5 p. m. in winter, but at least three hours a day may be deducted for meals and rest, the actual working hours being reduced to eight hours per day in summer and seven hours in winter.

IRRIGATION AND FARMING.

The following extracts are from a paper prepared by Dr. H. Latham on irrigation and farming in Japan:

The rain-fall is exceedingly heavy, varying according to locality from 60 to 100 inches annually. Along the ocean shores, on the alluvial plains, the average amount of precipitation is about 60 inches. At the foot of the mountain ranges it is 70 to 75, and on the great mountain sides it will reach 100 inches. It may seem strange to us of Europe and America that any irrigation should be found necessary or useful with such a rain-fall, but such is the fact. In times so far back that no record is found irrigation was practiced in Japan, and as months have become years, and years continue, that system has spread from one end of the Empire to the other. The Government records show decrees of the Emperor Sinjin, who reigned in the century before the Christian era, regulating irrigation, and his son and successor ordered the construction of 800 irrigating canals in different parts of the Empire. This system is in universal use on the great plains that border the seas, in the great valleys, and on the hill and mountain sides. In all parts of the mountains and in the foot-hills, at the sources and along the line of the streams, there are immense reservoirs for the storage of water in the rain season. By this means the overflow of the lower lands in the wet months is to some extent prevented, and the supply in the dry months is supplemented. The ditches for irrigation are always so constructed as to be a means of drainage when there is an excess of rain. By this means the supply of water to the farmer is equalized through the whole year. Another necessary result is accomplished. The health of the irrigated districts for plants and people is conserved. Drainage for these purposes is just as important in any country as irrigation. The Japanese system is perfect in three important particulars, viz: Storage of water, distribution of water to the land, and the drainage of the irrigated land.

That irrigation has been proved to be of incalculable benefit is shown by the enormous crop rate throughout the whole Empire. It is within bounds to say that a Japanese farmer raises more from one acre of his land than a California farmer does from five acres. It is true that much of the land in Japan has two crops a year, one in summer and one in winter. In many places in Japan the soil has yielded two crops a year for two thousand years, and the productive capacity of the soil is greater now than ever. This is in marked contrast to the result of land "skinning" in the United States.

In the spring a piece of land will be sown to rice, which is the great staple crop. The rice is harvested in October, with an average crop rate of 50 bushels to the acre; and right on the heels of the reaper follows the spade and mattock preparing the land for a crop of wheat, barley, or rye. These latter crops are sown in October and November, and are harvested in April or May.

barley to the acre. In order to maintain through hundreds of years such a crop rate, fertilization is of the utmost importance. In fact, it is the great problem for the farmer to solve. Unlike American and European countries, the farmer in Japan has no barn-yard fertilizer. Cattle and horses are used mainly for purposes of packing. Under these circumstances the question of fertilizers is of the first importance. Experience has taught the Japanese that irrigation is an important means of fertilization. It has been demonstrated that irrigated lands only require about two-thirds as much fertilization as non-irrigated lands. As an evidence of what thorough tillage combined with irrigation and drainage has done it needs only to be stated that Japan has under tillage only 12,000,000 acres; that from these 12,000,000 acres 38,000,000 people are clothed and fed. More than this, 40,000,000 pounds of tea, silk to the value of several million dollars, and large quantities of tobacco and rice are annually exported. Such results speak more than volumes of what thorough tillage, supplemented by irrigation, can do even in a country with from 60 to 100 inches of rain-fall.

I do not think it would be proper for me to conclude this report without referring to a custom which has enjoyed immunity so long as seemingly to be regarded as a law. This custom is not confined to Japan. It has its votaries in Europe, but it is because the number is increasing in Japan that I desire to direct special attention to it. I frequently see in the markets of this port American brands on merchandise that never was in America. These brands are used for the purpose of commanding ready and prompt sales of the merchandise they cover. It is time for an end to be put to such an infamous fraud and imposition. It is a deceptive misrepresentation of American industries and a gross and palpable wrong practiced upon American manufacturers. If a certain brand or the name of a certain manufacturer becomes popular in the United States, it is not long before the brand and name is seen on packages of merchandise made in Japan or imported from Europe, offered here either at wholesale or retail. Some of the Japanese merchants are quick to see the advantage of utilizing such means and unscrupulous enough to do it.

A nation that is demanding, with so much reason, the rights of undisputed sovereignty should incorporate in its code of laws a provision against this wholesale counterfeiting now going on within its borders and by its subjects. I submit the great injustice being done the manufacturers of the United States, and the importance of arresting this larceny of American brain. — OSAKA, JAPAN, *December 16, 1888.*

T. R. JERNIGAN,
Consul.

GOVERNMENT SALARIES IN SWITZERLAND.

It may be of interest to know that the salaries paid to functionaries in
of the people at large.

Each of the seven members of the federal council which constitutes in its collective capacity the executive authority of Switzerland receives a salary of \$2,400 a year. The president of this council who holds his office only a single year, and who is at the same time styled president of the Swiss Confederation but is invested with no more ample authority than his six colleagues, is allowed \$300 in addition for the so-called "expenses of representation," that is, for entertainments and kindred purposes. In the appropriation bill for the year 1888 the sum of \$17,100 is the only provision made for the maintenance of the executive department.

Small as the remuneration of these officials appears it is considerably larger than that provided by the law of 1848, which gave the president 6,000 francs and each of the other members of council 5,000 francs a year. Ten years later the above sums were raised to 10,000 and 8,500 francs, respectively, at which point they remained till the present rate was established.

The *Conseil des Etats*, corresponding to our Senate and composed of two members from each canton, is paid by the sovereign states of whose representatives it consists. Its members receive at most 20 francs for each day's attendance, while others are allowed only 6 francs. As members of joint committees, however, they receive additional compensation.

The members of the national council elected by universal suffrage receive 20 francs for each day's actual attendance. Before 1874, when a new Swiss constitution was adopted, they received 12 francs a day and mileage of 150 francs for each league traveled in repairing to and returning from the assigns. This mileage is still paid by the Confederation.

In the legislative appropriation bill for next year the following sums are provided for the compensation of the two houses of the Federal Congress:

Conseil des Etats (Senate), salaries and mileage of committees, 10,000 francs; salary and mileage of translator, 3,000 francs; service, 2,500 francs; total 15,500 francs.

National Council (House) salaries and mileage of members and members of committees, 200,000 francs; translator, 3,000 francs; service, 3,000 francs; total, 206,000 francs.

Accordingly, the entire outlay of Switzerland next year for its executive and legislative department will be no more than \$61,000, a modest sum even for a country of less than 3,000,000 inhabitants. — BASLE, *January 10, 1888.*

GEORGE GIFFORD,
Consul.

SHIPPING OWNED IN THE NEWCASTLE DISTRICT.

The publication of the latest volume of Turnbull's Shipping Register enables a census to be made of vessels owned in various ports of the United Kingdom. Below is given a statement of vessels registered in some ports within this consular district:

Ports.	Sailing vessels.	Steamers.
Newcastle.....	88	355
North Shields.....	82	259
South Shields.....	34	57
Total.....	204	671
Sunderland.....	71	266
West Hartlepool and Hartlepool.....	15	233
Grand total.....	290	1,170

Middlesbrough shows 87 vessels, the division in sailing vessels and steamers not being given. It will be seen by the above that over 1,200 steamers are owned in six ports of this consular district. This statement will give some idea of the great trade which centers here, and which extends over the whole world. It is also interesting in showing how rapidly steam is superseding sail in the trade of the world. — NEWCASTLE-UPON-TYNE, *March 1, 1888.*

JASPER SMITH,
Consul.

INFORMATION OFFICES OF ARGENTINE REPUBLIC.

The offices of information, created recently abroad, work with regularity in the principal capitals, and the effect of their propaganda are being felt in Europe. Provided with necessary elements they are able to give whatever information is required respecting the Republic. Numerous newspapers and periodicals publish the details transmitted to them by the offices, and it may be said that there is not a single European publication which does not make known our progress to the public. A telegraphic service in Paris, in charge of the inspector of the offices of information, transmits to them and to the European press all important news respecting our country. For the first time our products appear in the exhibitions which are so frequently held in the old world. Every office has a collection of specimens, and is under obligation to send it to these exhibitions, in which we have obtained first prizes. The offices of information are visited by numerous persons who desire to come to this country to do business with it, and in many of the offices there is not a sufficient staff to give the verbal and written information sought, so great is the increasing demand for it. In connection with these offices, and to demonstrate the riches of the Argentine soil, a permanent museum of products has been created in this capital in which will be collected and classified scientifically all the raw material and those of the first and second extraction which are found or prepared in the country, and the studies will be made of them which are necessary for proving their merits. — the exigencies of science and progress; the

Republic. The executive power has taken the necessary measures for making the museum an establishment which, by its practical services, may promote the natural interests by making known, in the most eloquent manner, how great may be the development of industry among us in making use of the riches of our territory. The administrative part of the museum, which contains the bases of its complete and perpetual preservation, has been carefully formulated, and the plan of the work is being carried out all over the Republic.—*From President's message.*

RAILROADS IN YUCATAN.

One of the best built railroads in Yucatan is that owned by the brothers Rudolfo and Olegario G. Canton, and named the Merida and Peto Railroad; and as it may be considered a typical road of Yucatan a general description of it may be of use.

Its concession was consummated May 27, 1878, and the first rail laid a year later. The road is of 3 feet gauge, well built, and ballasted for the most part. The rails are of Bessemer steel (*purchased in England*), weighing 40 pounds to the yard, and resting upon sleepers of "chu cum," a very hard wood, as hard and heavy as *lignum vitæ*. These ties, or sleepers, are placed 2 feet apart, fifteen to the rail length. The locomotives are four in number, all purchased in the United States. Five passenger cars are now in use. Twenty-two box and platform freight cars carry the bulk of the traffic.

Upon the line of the 68 kilometers now in actual operation there are eight suitable and thrifty looking stations, built of stone and mortar, well cared for, and very neat in appearance.

The cost of constructing a road-bed in Yucatan is materially lessened by the level land surface. I know of but one natural depression necessitating a fill of over 25 feet upon any of the five railroads in Yucatan. The rocky plane that for the most part covers the populated portion of Yucatan is of recent formation, being of soft, calcareous rock, and in traversing it the road builders sometimes find themselves literally breaking through, the percolating waters and other causes combining to form caves or "cenotes" of varying magnitude, and covered with a crust of various degrees of thickness and strength.

The above-described Merida and Peto Railroad has just had to grapple with and overcome a difficulty of this nature. While cutting the road through a small hill near the station of Hunabchen a blast suddenly opened the mouth of a gulf beneath, which luckily proved to be comparatively small and shallow, and with much labor was filled sufficiently to allow the work to proceed.

I have collated the following data concerning the railroads of Yucatan. The amount expended can, of course, be considered as only approximately correct. Various reasons make it an impossibility to give the amount in dollars and cents.

TABLE A.—*Railroads of Yucatan—Construction data.*

Name of railroad.	No. of stations.	Ultimate terminal points.	Length of line.	Already constructed.	Gauge.	Rails.			Government subventions.	
						Class.	Weight per yard.	Where purchased.	National.	State.
Merida and Progreso.....	3	Merida and Progreso.....	24 miles...	24 miles..	4 ft. 9 in....	Bessemer steel..	60 pounds...	England..	U. S. gold.	U. S. gold.
Merida and Soluta.....	3	Merida and Soluta.....	.....	30 miles..	do.....	do.....	do.....	do.....	\$9,525 per mile.	\$45,600 at completion.
Merida and Peto.....	8	Merida and Peto.....	100 miles...	43 miles..	3 feet.....	do.....	40 pounds...	do.....	1,192 per mile.	7,152 per mile.
Merida and Celestun.....	4	Merida and Celestun.....	102 miles...	27 miles..	do.....	do.....	do.....	do.....	do.....	Do.
Merida and Valladolid.....	6	{ Merida and Valladolid.	106 miles...	22 miles..	do.....	do.....	do.....	do.....	do.....	Do.
Progreso Branch.....		{ Conkal and Progreso...	.....	19 miles..	do.....	do.....	do.....	do.....	do.....	Do.

TABLE B.—*Railroads of Yucatan—Rolling stock data.*

Name of railroad.	Name of owner.	Engines.	Where purchased.	Passenger Cars.		Where purchased.	Freight Cars.	Where purchased.	Class of brakes.
				Passenger	Freight				
Merida and Progreso.....	Merida and Progreso R. R. Co..	7	1 England, 6 United States..	10	32	United States...	United States...	United States...	Chain brakes.
Merida and Soluta.....	Canton Bros.....	4	United States.....	5	22	do.....	do.....	do.....	Do.
Merida and Peto.....	Merida and Calkini F. C. Co.....	2	do.....	5	8	do.....	do.....	do.....	Do.
Merida and Valladolid.....	Gen. Francisco Canton.....	4	do.....	6	27	do.....	do.....	do.....	Do.

Merida and Progreso (broad gauge, 4 feet 9 inches), being the first railroad constructed in Yucatan, received a definite sum from the state upon the completion of the road. Constructed afterwards received from both state and national governments a stated sum for every kilometer completed. The "subvenciones" due the above-mentioned Progreso Railroad have now, I understand, been paid in full. The other roads have not as yet been paid the full amounts granted them, but the payment is believed to be of time. F. C. is an abbreviation for "ferro carril," or railroad; thus, "F. C. Merida y Progreso" translated reads "Merida and Progreso Railroad."

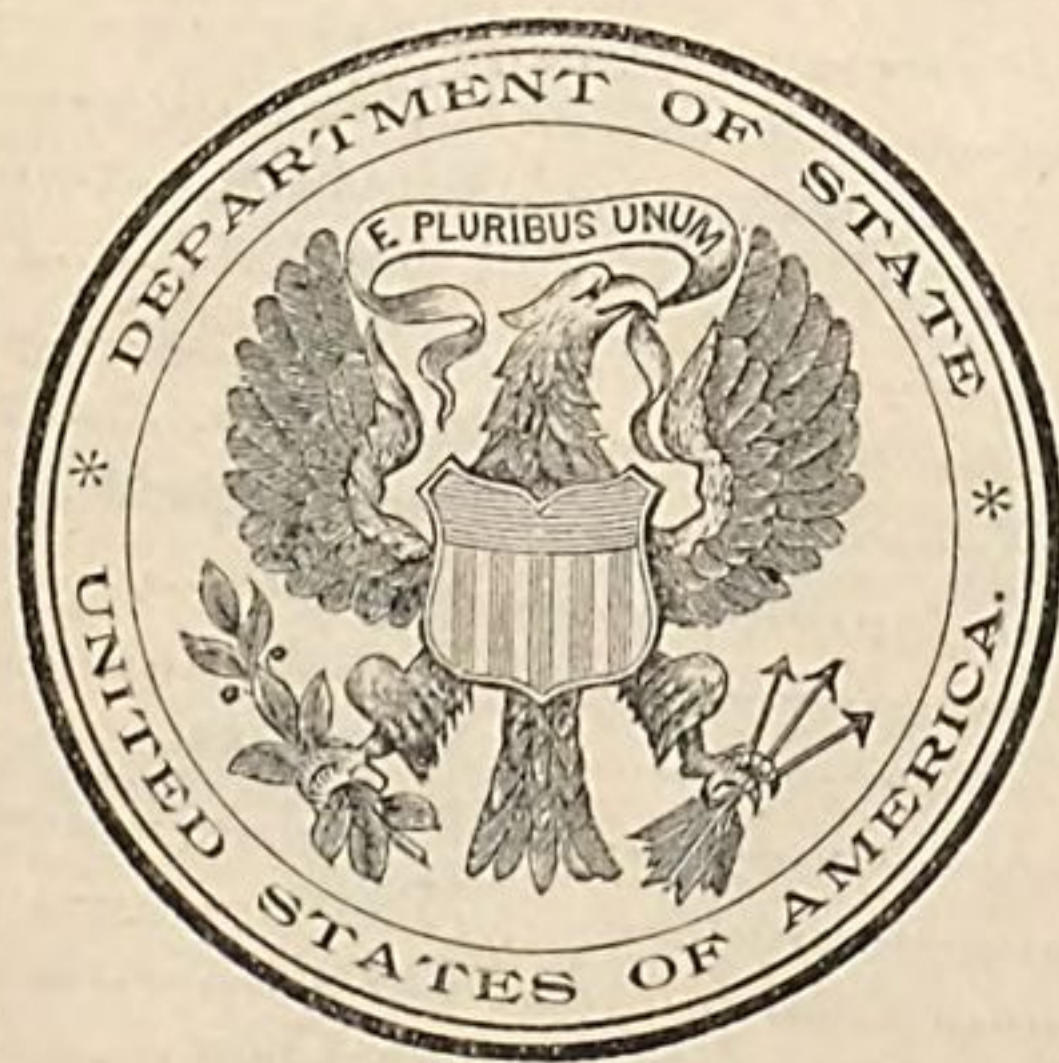
The above tables of data having been collected by the consul in person, and, so far as possible, verified, they can, I think, be relied upon as being approximately correct. It is exceedingly difficult to obtain the exact figures, whether it be in dollars and cents or in miles.

REPORTS

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CONSULAR REPORTS

ON

COMMERCE, MANUFACTURES, ETC.

No. 94.—JUNE, 1888.

MANUFACTURE OF GLASS BOTTLES IN GERMANY.

Within this consular district, about 5 miles from the city of Düsseldorf, in the valley of the Rhine, at the base of a low range of hills, is located the glass bottle manufactory of Ferd. Heye, of Gerresheim, claimed to be the largest establishment of the kind in the world owned and operated by one individual. Its convenience for obtaining supplies is second to none; two lines of railroad, both owned by the German Government, pass the establishment, one line leading direct into the yard.

The small German town of Gerresheim, containing about 3,000 inhabitants, immediately adjoins the works, the two being inseparable on account of the mutual interests involved, and it is properly said here that Gerresheim is the glass-works, and the glass-works Gerresheim.

Upon the side hills adjoining the town, within a few hundred yards of the establishment, may be found millions of loads of rich, soft, golden yellow sand of the best quality, while half a mile further away, at another range of hills, are quantities of the best white sand. Supplies may be had for the cost of hauling; both sources are availed of, and are considered of the greatest value to the works.

The town of Gerresheim is located on the line of railroad leading from the Rhine to Berlin, via Barmen and Elberfeld. The section passing the glass factory is said to be the second line of road built in Germany, the first having been constructed from Nuremberg to Kehl, upon which was operated, in 1837, the first engine introduced into this country.

In this connection it is strange to observe that while throughout Germany the greatest improvement has been made in the past twenty years in the matter of good rolling stock, depots, and lighting and heating facilities, yet

BUILDINGS AND GROUNDS.

The buildings and grounds of the works in actual use cover an area of about 60 acres. The grounds are laid off in divisions, squares, and streets, and are properly graded and paved where necessary. Parks are arranged for the storage of bottles, and tracks constructed for the transportation of material and for other purposes. The buildings are modern in appearance, many in number, and are constructed in a substantial manner of brick, stone, and cement. The smoke-stacks, or large brick cupolas, are ten in number, with an average height of 100 feet, and have the appearance of a village of spires. The grounds are entirely surrounded by a heavy brick wall, and watchmen are stationed at the gate and other exposed points, and no one is allowed to go through the place without permission or unaccompanied by a guide.

Adjoining the works, and within the inclosure of a large park laid out into squares and streets, are built about 400 dwelling-houses, two stories in height, uniform in color and appearance, provided as homes for those of the employés who desire to occupy them at a low rent. Two, and sometimes three, families occupy a house. A small garden adjoins each, shade trees are scattered over the place, and the whole, being neatly paved, drained, and kept in perfect order, presents the appearance of a small village. Those who occupy the houses are furnished fuel and light at cost prices, and everything is done to make them contented. Watchmen are stationed through the streets, regular rules in regard to cleanliness and other matters are enforced, and the best order at all times prevails. At the extreme lower end of the park, near the main gate, surrounded by about two acres of ground neatly laid out with walks, flower-beds, etc., stands the plain and unpretentious cottage home of the owner, Mr. Heye. It is two stories high, the outside being similar to the other buildings, and the interior is well but plainly furnished, without any attempt at display—about the same as a neat American cottage home.

AT THE WORKS.

I made a visit by appointment to the works a few days ago. I was met at the station by Mr. Heye, and was conducted to the office building near the main gate, where I observed in the different rooms about twenty clerks employed, from general appearance, with the greatest system in the arrangement of their several duties. I was accompanied by one of the chief officials through the establishment. I may add here that the main office building is connected by telephone with the cities of Düsseldorf and Cologne, and by special telegraph wire to the main office in Düsseldorf, thus virtually having
 communication by means of the cable with the entire business world.

ican market. For a year or two past the orders from America were small, but since the 1st of January the shipments have increased until they amount at the present time to 300,000 to 500,000 bottles weekly, which are invoiced at the Düsseldorf consulate consigned to dealers in New York, Saint Louis, Milwaukee, Chicago, and Cincinnati, in bills of about 1,000 gross each.

Formerly the wine merchants imported their Rhine and Moselle wines in bottles, but some advantages to be gained in the transaction has prompted them to buy their wine in bulk, ship the bottles separately, and do the bottling in America.

KIND OF BOTTLES MADE.

The different varieties of bottles made at this establishment number now about 5,000, which may be said to include nearly every kind and shape of bottle in existence. Here I found all the different kinds of mineral-water bottles so common in use in America, from the egg-shaped soda through the list, and also in white glass ware, with fancy glass stoppers, all the varieties that are in use in the drug stores. Further there were Irish whisky, English porter, the good old American whisky, 5 to the gallon, large Spanish wine and soda bottles, French champagne of all kinds, Rhine and Moselle wine, and in short, orders filled monthly from North and South America, England, Ireland, Spain, Portugal, Germany, and even remote places, for all kinds, varieties, and colors in existence. Shipments, according to the custom of the trade, being made with breakage at the risk and cost of the purchaser. It was shown by the books that a London firm had ordered annually for years past 10,000,000 to 15,000,000 of a certain kind of mineral-water bottle for mineral water procured from German springs and shipped from London to all parts of the world.

SAMPLE ROOMS.

I next visited, in one of the large buildings, the sample rooms, consisting of two, each about 20 feet square, the walls fitted up with shelves containing about 10,000 to 15,000 bottles, all arranged according to size, number, and quality, and properly labeled, with the number of the mold also noted. The samples included duplicates of all bottles made at the works, besides a complete set of samples of foreign manufacture, such as those from the glass-works of France, England, and the United States. My guide handed me from the shelves bottles made at the glass-works of Baltimore, Md., and with them the same character of bottle made at Gerresheim. The main points in difference would be readily observed, the principal one being the seam always found running up the side of the American bottle and marring its appearance, which by the manner of blowing was obviated here, and the claim made that the American bottle was inferior.

MOLD ROOM.

In another side of the same building was located the mold room. This room, always kept locked, is about 20 feet wide by 60 feet long, arranged with shelves upon which are placed in regular order the molds of different kinds and sizes. Besides, on the floor, in rows up and down the middle, I observed molds of all kinds placed according to size and number. The uniformity of the labels and arrangement of the great number of molds in the room giving the whole the appearance of order and regularity, and rendering it an easy matter to select from out the number any design wanted without trouble or delay.

LIGHTING OF THE WORKS.

The entire place is lighted by electricity. The electric light, so common in America, is fast finding its way through this entire country, and on one's travels it may be seen at all the railway stations and also at most of the large manufacturing establishments of any note. It is claimed that at this time there are about 250,000 electric lights in use in Germany alone. Chiefly American patents and American agencies have been established all over Europe, the headquarters of the Edison system, doing a thriving business, located at Antwerp under the charge of Mr. Dyer, of Washington, D. C.

The owner of this glass factory, with an eye to future business, purchased a most complete outfit for lighting the entire place from a dealer in Cologne, at a cost of about 10,000 marks, the plant having a capacity for not only the works, but the village of Gerresheim adjoining. The main railroad station of the town is located at the gate of the works. The lights are furnished the Government for the station use at a compensation sufficient to pay a fair interest on the whole investment, and, at a later period, when it is expected the town will avail itself of the convenience, it will be a good paying investment, in addition to the lighting of the establishment, which will then be obtained free of cost.

SUPPLY OF COAL.

The glass factory at Gerresheim is very fortunate in its location as to the supplies for its purposes. The greatest quantity of sand is within a few hundred yards. A small adjoining town furnishes its labor, and the coal-mines of Westphalia, in the neighborhood, supply the required coal at a low price, which is an important item. Within the valley of the Ruhr, beginning at a point 2 or 3 miles from Gerresheim, and running a hundred miles on farther north and east, are to be found extensive and never-failing coal-mines of western Germany, called the "Westphalia Mines." The production last year amounted to about 27,000,000 tons, the largest consumers being the

breakage allowed, and sold at a profit in competition with home industries, it may be explained by the excellent location near a base of supplies, exceeding low price of labor, and good management on the part of the conductors of the enterprise avoiding strikes or any interruption in the steady and regular course of business.

NUMBER AND WAGES OF EMPLOYÉS.

The number of persons employed in the entire works vary from 1,800 to 3,000, in which are never less than the former number, including many female employés, the entire number varying according to the contracts to be filled and work on hand. It is a very common thing to see women employed in this country, even in the most menial street service; but at the glass-works their occupation seemed to be confined principally to the packing department and cleaning and clearing up the yard.

In three or four of the large buildings the furnaces are kept steadily going, and the blowing of bottles continued night and day. The men who perform this class of work, considered the most important in the establishment, number alone about 400, and are paid by the piece, or according to the number of bottles made. Each workman has one apprentice allotted to him to learn the trade and as his assistant, and the bottles are all specially marked to show by which set of workmen made.

The men are assured steady employment, prompt pay, and they appear to be perfectly contented and healthy. They all live in either the Heye village or at the town of Gerresheim adjoining. If their houses belong to Mr. Heye they are charged a small rent, about 4 per cent. on the cost of the building, not including the ground, which is charged against their weekly pay. The clothing of the employé is coarse, but clean and comfortable, and the food simple, consisting of beer, bread, coffee, tea, cheese, and vegetables, with meat about once a week. Their contentment is due to the agreeable social conditions among themselves; the absence of real suffering, steady employment, and ignorance of the world that lies beyond the limits of their quiet village. The pay is small, but the cost of living with them is also comparatively light. The highest daily pay of the blowers averages from $3\frac{1}{2}$ to 5 marks (87 cents to \$1.20). The furnaces that are kept going at night are run by three sets of hands, who divide up the time and keep the work steady for the twenty-four hours of the day. The excellent lighting of the establishment by electricity admits of the work being carried forward without interruption, and ordinary employés are required to perform about eleven and one-half hours labor each day, going to work at 6 o'clock a. m. and working until 7.30 p. m., with an allowance of one hour for dinner, and both morning and afternoon half an hour for beer, coffee, etc. The wages of apprentices are about 50 pfennigs ($12\frac{1}{2}$ cents) per day for the first year, with a slight increase each year: the women

STORAGE PACKING.

On the outskirts of the yard, against the heavy bricks walls, open sheds are constructed where the packing is chiefly done, and in the open squares of the yard, between the streets, parks for storage are well laid out and graded. Some 5,000,000 or more bottles are generally on storage in the yard, piled in perfect order, the whole presenting somewhat the appearance of an ordnance yard with its storage of shot and shell. Sizes and qualities are arranged together, and necessary wooden signs stationed at the head of each pile.

The Government railroad runs through the yard, and shipments for Germany are packed loosely in the cars with straw, bottles for export being in sacks; no charge is made against the employés for breakage. The yard has the necessary supply of trucks, cars, and well-laid tracks for all conveniences. The packing for export is done under the large side sheds, mostly by women; coarse canvas is used for sacks, containing 1 gross, and it is remarkable to see with what dexterity in this packing process each bottle is wrapped in a small bunch of straw—layers made of 1 dozen, with straw between—the whole sewed up, making an oval compact bundle that can be handled roughly without much danger of breakage, and all without the aid of machinery of any kind.

BOTTLE BLOWING.

As is the usual custom in all bottle making, the heated material is taken from the furnace on the end of an iron pipe or tube placed in the mold by the apprentice, and then the process of blowing into shape follows; one of the most noteworthy points, however, is that the rod or pipe is repeatedly turned by the workman during the process of blowing or formation of the bottle, which gives it a perfectly smooth and complete appearance when done, and avoids the ugly seams or ridges often seen up the sides of bottles of American manufacture.

I inquired particularly on this point, and was informed that the workmen in American and English shops refuse, for some reason, to perform this special extra labor of turning the bottle in the mold, which the employés here, according to the custom of the trade, are obliged to do, and, therefore, for that special reason the bottles are claimed to be superior to American manufacture, and, as far as I was able to judge, they were in general appearance. When completed they are carried by boys, three at a time, on a forked iron rod to the cooling-ovens, and not exposed to the air, for three days, that being the time allowed for cooling.

The furnace heat, which does the melting of the material, is produced by

The furnaces are large arched pits sunk

An attendant at the side of the furnace has the care of supplying gas to the fires, which is done by two different pipes, let in with cold air, to form a more perfect draft. The current of gas is changed from one tube to the other by means of a crank every half hour regularly, the supply and quantity of heat being simple and perfect. In my examination of this part of the establishment I found most complete gas-works under ground. Only perfect bottles are allowed to go out on orders, the piles being carefully assorted, and defective ones used over again as so much material.

MATERIAL OF WHICH BOTTLES ARE COMPOSED.

In the large building with concrete floor connected with the furnaces by means of tracks and cars below, covered passages overhead, is located the mixing place for the material, and it is here prepared for the furnaces.

The sand is handled by means of the yard car trucks, and before use is burned and sifted. The material when prepared is carried from the room by means of the overhead passage in wooden box tubes direct to the blowing furnaces and supplied to the furnaces through small round holes about 12 inches in diameter.

There is no doubt that some secret exists in the composition of this mixture, but general observation only revealed the use of burned and sifted sand, lime, and sulphur in certain proportions.

In conclusion, it may be noted that Mr. Heye, the present owner of the large establishment, a man about fifty years of age, made his beginning in life unaided, and by his industry and perseverance brought to great proportions this well-known factory that bears his name. He laid the foundation a few years ago on the present site with a dozen employés and two small buildings, and his remarkable success is a parallel to the success of Krupp, who, in like manner, founded the celebrated Krupp Gun Works at Essen on the Ruhr. Mr. Heye has recently received from the German Government the title of "Commerzien Rath" (adviser), as a recognition of his rare business qualifications.

Since the beginning of this report a contract has been entered into between Mr. Heye and the Apollinaris Mineral Water Company for the delivery within one year of 19,000,000 bottles at the following prices, viz: 58 marks per 1,000 large quarts; 75 marks per 1,000 small pints, 2 per cent. discount.—DUSSELDORF, *March 20, 1888.*

D. J. PARTELLO,
Consul.

ANNUAL REPORT OF THE EXPORT SOCIETY OF VIENNA.

The results obtained by the export society of this Empire in extending the trade of Austria-Hungary to foreign countries, and the means by which these results were accomplished, are doubtless of interest to the American exporter and manufacturer as well as importer, and I beg leave, therefore, to submit herewith a synopsis of the annual report of this society for the year 1887, which has just been published.

The president of the society congratulates its members upon the practical success which has rewarded their efforts since the organization eighteen years ago, and states that the prominent manufacturers of the Empire have united in a powerful association, under the lead of the export society, systematically extending the trade of the country to Dutch and British India, America, and Australia, as well as to the countries bordering on the Mediterranean. He proceeds to recite these efforts in detail, and reports that during the past year a commercial agent was thoroughly instructed by the society during a term of two months and was sent to Yokohama as the representative of one hundred and twenty-one Austrian firms for the purpose of making collections as well as effecting sales of merchandise on behalf of said firms and that his efforts met with decided success, and that within a few weeks after his arrival in Yokohama with samples of Austrian manufactures large orders were received by the firms who united in this venture.

The report dwells with particular satisfaction upon the favorable results obtained through the establishment of an Austro-Hungarian commercial agency at Buenos Ayres which was organized only about eighteen months ago. A sample depot of Austro-Hungarian manufactures is connected with this agency and large orders have been received by the home manufacturers.

Attention is also called to the World's Exposition in Melbourne, to take place during the current year, and the report states that the invitation of the exposition committee extended to the export society has been accepted and that the requisite arrangements have been made for the exhibition of Austro-Hungarian manufactures, and that more than one hundred of the most responsible firms of manufacturers have already promised to send their exhibits to Melbourne. And that, furthermore, in order to insure a permanent benefit to the exhibitors, and to create a lasting business connection between Austria and Australia, arrangements have been perfected in order to establish immediately after the close of the exhibition a sample depot of Austrian manufactures at Melbourne.

subjects of commercial interest, and that the society has also succeeded in several instances in making collections abroad for its members at a much lower rate of expense than could have been possible by any private effort in this direction.

In order to give members an opportunity to express their views on important questions of commercial interest, and to instruct, if necessary, the board of directors of the export society, monthly meetings were held during the past winter, and the report states that the discussions held at such meetings and the lectures delivered proved of great practical benefit to the general purposes and objects of the society.

THE EXPORT SAMPLE DEPOT AT VIENNA.

This sample depot was established through the efforts of the export society, aided by the very effective and valuable assistance and protection of the ministry of commerce, and contains the following exhibits or samples of Austrian manufactures :

1. Metal wares.
2. Machines, tools, wagons, cars, etc.
3. Stone, earthen, glass, terra-cotta, and porcelain ware.
4. Wooden ware and furniture.
5. Textile goods.
6. Clothing.
7. Leather goods, rubber goods, hair brushes, and feather goods.
8. Paper and polygraphic products.
9. Notions and fancy goods, Vienna specialties.
10. Provisions and natural products.
11. Chemicals.
12. Surgical and hygienic instruments and implements.

To the American importer who buys Vienna specialties, such as fancy goods, fans, bronze ware, leather goods, smokers' articles, etc., this sample depot is certainly an important auxiliary in making his purchases, provided he comes to Vienna personally and does not confide his orders exclusively to brokers and commission merchants. There can be no sort of doubt that this sample depot has materially aided the export trade of this monarchy, and the members of the export society fully appreciate this fact. According to the statement of the president, contained in his annual report, particular pains were taken to give the widest possible publicity to the existence of this depot. The Austro-Hungarian consuls, stationed in foreign countries, were instructed by the ministry of foreign affairs to publish notices and descriptions of the Vienna sample depot in the public journals of their respective consular districts. Twenty-five thousand handbills, printed in five different languages, were distributed and posted by the aid of the

was forwarded to the number of more than 25,000 copies to the said consular officers, with instructions to distribute the same among the importing firms of their respective districts.*

The report states, in conclusion, that more than two hundred foreign importers examined the sample depot during the last year, preparatory to making their purchases, and that with many of these visitors arrangements were entered into on the part of the export society to represent the interests of the exhibitors in their respective localities and to maintain a regular correspondence with the society with reference to the commercial needs and demands of their respective countries.

EXPORT TRADE OF AUSTRIA-HUNGARY TO THE SOUTH AMERICAN STATES.

For some years past the exporters and manufacturers of Austria-Hungary have contemplated the establishment of a new line of steamers to run regularly between Trieste and Rio de Janeiro, and a new contract to be entered into with the Austro-Hungarian Lloyd to the end of carrying out this purpose has recently been submitted to Parliament for approval, and in case of its consummation it is expected that these steamers will begin to run some time during the latter part of the current year.

So far the trade of this country with Brazil has been inconsiderable. During 1887 but sixteen ships, under the Austro-Hungarian flag, landed and cleared from the port of Rio de Janeiro—in all of 15,616 tons burden—14 steamers and 2 sailing-vessels. The total export to this port under the Austro-Hungarian flag, during the period aforesaid, represents a value of 920,288 florins.

When I examined the details of this export trade from Trieste and Fiume to Rio, I was surprised to find quite a considerable quantity of flour as one of the prominent articles of the list: 11,300 barrels of flour were exported from Trieste, and 9,108 barrels from Fiume, to Rio, during 1887. By what strange combination of commercial possibilities it was made profitable to attempt a competition on the part of Austria-Hungary with the United States in the article of flour in a market, so to say, next door to our wheat fields and world-renowned flour-mills, with the important factor of transportation decidedly in our favor and against the Austrian exporter, I was at first at a loss to conjecture. I was inclined to believe that the only plausible explanation was to be found in the sadly reduced condition of our shipping, a condition incapacitating our exporters and manufacturers to take advantage of the close proximity of South American markets as against the European exporter with a subsidized and large merchant marine at his command. I found, however, upon inquiry, that this export of flour from Trieste and Fiume was due entirely to the superior quality of the Hungarian wheat

*I may be permitted to say here that this mode of advising foreign importers of the capacities and
importers must of necessity be much more effective and

out of which this flour is manufactured. It is claimed that in the so-called "Banat," a famed wheat district of Hungary, a quality of wheat is grown which has certain chemical properties not found in any wheat raised elsewhere, and that the flour made from this "Banat" wheat will produce the finest Vienna bread in a perfection which can not be reached with any other flour, not even with the very finest produced by American mills. This superiority of the "Banat" wheat also accounts for the fact that considerable quantities of Hungarian flour are exported to England.

JUBILEE INDUSTRIAL EXPOSITION AT VIENNA.

On the 14th of May the Jubilee Industrial Exhibition, which has been in preparation for the last two years, was opened by the Emperor. The manufacturers of the Empire in organizing this exhibition were instigated by a desire to commemorate in a practical manner the fortieth anniversary of the reign of Francis Joseph I. They point with just pride to the great progress which Austria has made upon the field of industry during the Emperor's reign, and proclaim that ever since constitutional government took the place of the absolute monarchical reign the industrial energy and inventive genius of the people have been stimulated to an unusual degree.—
VIENNA, *May 17, 1888.*

EDMUND JUSSEN,
Consul-General.

CANADIAN ROYAL LABOR COMMISSION.

[TRANSMITTED BY CONSUL WILLIS V. PATCH.]

A. T. Freed, of Hamilton, Ont.; Michael Walsh, of Halifax; J. Alfred Clarke, of St. John, Patrick Kirwin, of Quebec; W. A. Gibson, of Ottawa, members of the Royal Labor Commission, with A. H. Blackly, of Galt, Ont., as secretary, were in St. Stephen Saturday and took evidence from several manufacturers and workmen of the town concerning the condition of labor here. The meetings were held in Temperance Hall, the first beginning at 2 o'clock in the afternoon of that day.

G. W. Ganong, of the firm of Ganong Bros., manufacturing confectioners, was the first witness. He had been in the business fifteen years, and the firm now employed from 80 to 125 hands. They consist of adults and children, about half being adults. The youngest employé was about fifteen years of age. Skilled workmen were paid from \$12 to \$25 a week, and unskilled hands from \$6 to \$8. Women earned from \$3 to \$4. They worked ten hours a day. From September 1 to December 20 the firm usually employed a full quota of workmen. There was some night work at that time, for which extra wages were paid at the rate of half a day for three and a half hours. The average number of hands employed was from 80 to 90. The business of the firm is principally done in the maritime provinces and is increasing. The wages in St. Stephen is higher than in Calais, but a comparison between the two places is not fair, for Calais is not a distributing center. Some of the employés of the firm are saving money. Workmen of St. Stephen, as a rule, are better off than those of Calais. The young people employed in the factory are chiefly natives, and the majority of them have a fair English education. Very few of the firm's goods are shipped to Newfoundland and none to the United States. There are separate dressing-rooms in the establishment for males and females. They import some labor from the United States.

W. F. Vroom, of Vroom Bros., furniture and casket manufacturers, testified that his firm employed 16 hands, 3 of them being boys. From \$10 to \$12 a week were paid to good cabinet-makers. Upholsterers earn about \$2.50 a day. They have no bound apprentices. Boys generally earn good wages when four years at the business. Workmen are given constant employment. They worked ten hours a day. The firm find no trouble with men drinking. A mechanic can get a building lot near town for a reasonable price. Tenement houses rent from \$75 to \$100, but the supply is not sufficient. The firm import their best furniture woods. They use no Canadian walnut, because it is more convenient to buy in Boston.

J. E. Ganong, of the St. Croix Soap Manufacturing Company, said the company employs 16 hands, who work ten hours a day. Skilled workmen earn \$20 a week, but a majority of them are unskilled. Both boys and men are employed, and earn from \$4 to \$9 a week. They have worked full time for the past year, and but little extra time is necessary. When extra time is worked three and a half hours is reckoned as half a day. They make nothing but laundry soaps, but intend to begin the manufacture of toilet soaps at an early day. A few girls are employed, who earn from \$2.50 to \$5 a week. The boxes used are put together in the factory by men employed for that purpose. The competition is generally local, and their principal market is the maritime provinces. They make some shipments west. The competition from Montreal is not nearly so strong as it was. The employes appear to be satisfied, and there are no strikes. The hands are all natives, with the exception of the foreman, who is from Boston. They find no difficulty in obtaining sober and industrious men.

B. R. DeWolfe, carriage manufacturer, has been in business for twelve years on his own account. He employs 8 hands. The stock used is generally imported. Blacksmiths get \$12 a week, and apprentice boys in the blacksmith shop get from \$3 to \$3.50 a week, with a yearly advance. Wood workers get \$10 a week. Trimmers work by the piece and average \$15 a week. Wages are paid every Saturday night in full. He never has any indentured apprentices. He uses English leads in painting. He has used Canadian leads, but never found them as good as the English article, though there has been a decided improvement in the leads manufactured in this country in the past five years. He uses Canadian colors principally, and they are just as good as the American. Canadian colors were better last year than ever before. He does not use any Canadian varnish, because it is not satisfactory. His principal competition is from Ontario, but he finds no difficulty in selling his carriages. A few years ago he had to compete with cheap American carriages, but these are not now sent to this market. He has no trouble with strikes. His employes are generally sober. He employs one American painter. Wages are as high as in Calais. A workman hiring a tenement has to pay from \$7 to \$8 a month for it. Board is from \$3 to \$3.50 a week.

T. Winslow Broad, of E. Broad & Sons, ax and edged tool manufacturers, said the firm employ 25 hands, including metal and wood workers. First-class blacksmiths get from \$2 to \$3 a day, and no skilled hands get less than that. One polisher has a contract for doing all the polishing, and he employs his own men. He is paid a lump sum for the work. One wood worker is employed at \$2.50. Forgers work eight hours a day and get \$2 to \$3. Helpers earn from \$1 to \$1.50 a day, according to their skill and term of service. The men get continuous employment. With one or two exceptions they are all sober. Five of the men are foreigners, the rest New Brunswickers. They find it necessary to import skilled labor. Hands are paid once a month, and are satisfied with that. As a rule they save money. The firm do not take apprentices. The business is constantly increasing. Most of their goods are sold in St. John, Halifax, and Montreal. Some are sent to British Columbia. There is some

They use English, Londonderry, and

six looms. Four-loom operators earn from \$1 to \$1.25 a day. They consist of both men and women. Women as a rule earn higher wages than the men in the weaving room. Mr. Dexter here explained the service a hand entering the weaving room is required to perform before being intrusted with 4 looms. On plain work weavers handle 6 looms, on fancy work only 4. The age of the youngest person allowed to run 4 looms is about fourteen years, and from that they run up to twenty-five years. The wages in the spindle room average 65 to 80 cents a day, according to ability. The youngest employé is about eleven years old. Beamers average from \$1.25 to \$1.50 a day. They are the best paid of the ordinary hands, and their ages run from fifteen to thirty years. Warpers receive from 85 cents to \$1 a day; slashers, \$1.50 to \$2; dyers, \$1 to \$1.25; pickers, 65 cents to \$1.25. There is a summer and winter system of work in the mill. In summer work is carried on from 6.10 a. m. until 6 p. m., with an hour for dinner and a half-holiday on Saturday; in winter work begins at 6.45 a. m. and ends at 6 p. m., except on Saturday when the hands are allowed to go at 4.30 p. m. It is the custom to fine for bad weaving, and if a man loses any time his month's wages is proportionately lessened. The doors of the mill open outward and afford ample means of egress in case of fire. It takes about five minutes to empty the mill on ordinary occasions. No children are employed under eleven years of age, and these are employed in sweeping and doffing, which gives time for occasional rest. The hands are paid once a month in cash, and requests for advances are very few. The rules of the mill forbid an advance except in extreme cases. There is no flogging or confinement of children. The majority of the operatives are obtained within a radius of 15 miles and from both sides of the river. It is now seldom necessary to import labor, hands trained in the mill being able to fill nearly every position. The morality of the operatives is good and the class of help now employed decidedly better than formerly. Very few of the operatives are unable to read and write. Many of the heads of families employed in the mill own their own homes. Girls pay \$2.25 a week for board in the corporation house, but are sometimes able to get it at a lower rate outside. Rent for the houses owned by the mill of the first and second hands is \$100 and \$75 a year. The St. Croix Cotton Mill is connected with the Canadian Cotton Manufacturers' Association, the object of which is to give cotton as cheap as is consistent with a fair living profit. The matter of hiring help is left with the overseers of the different departments. The average monthly pay-roll of the mill is about \$19,000. Local help is better than any that can be imported. There is very little drunkenness among them. He could not tell the proportion of American and Canadian hands. There has been no increase in wages since the manufacturers combined.

Charles Smith, card-room hand, stated that he had been employed in the St. Croix Cotton Mill for seven or eight weeks. He had worked in a cotton mill in the States, having been only thirteen years old when he entered. He then got 45 cents a day; he now gets \$1. Wages were better here than in the States when the cost of living is considered. The hours are the same. There is no dissatisfaction among the hands in the cotton mill and good order is maintained in the room where he worked.

John McFarlane, second hand in the ring spinning room of the cotton mill, was examined next. The average pay in the room is \$7.50 a week. No trouble exists between the hands. There is no truck system in the mill. Men pay from \$3 to \$3.50 a week for board, the cost being about the same as on the other side of the river. Operatives are paid once a month, which is remarkably satisfactory. The help generally is intelligent and educated.

C. N. Vroom, manufacturer of wigwams and oil-tanned goods, said he now employs 20 hands, who work ten hours a day. The sewing of the slippers is done by piece-work. The piece-workers earn from \$3.50 to \$15 a week. Both men and women are employed; some of them do their work at home. The regular hands get employment all the year. Hands are paid every Saturday night in full if they desire it. A skilled workman can make a day's work in a day. Rows of wigwams are visible in the background.

pipes. This business employs 6 hands when running on full time. The market for the pipe is principally local. Sand for the pipe is obtained near St. Stephen, and English and American cement is used. The hands get from \$1 to \$1.25 a day. A laborer receiving \$1 to \$1.25 a day can support a family. This is better wages than many other laborers get, the work being steady. Wages are lower in winter than in summer, because men can be obtained cheaper in the winter season.

Mr. G. W. Ganong, being recalled to give some supplementary evidence, said his firm manufactured 1,125,000 pounds of confectionery last year. Granulated sugar, refined in Canada, is principally used. Sugar has been cheaper the past year than formerly. The quality of Canadian refined sugar is fully equal to the American refined. The firm manufactures a large quantity of chocolate goods. Mott's, of Halifax, cocoa is chiefly used in the work, the last order of the firm being 6 tons. The business of the firm is constantly increasing, and last year amounted to \$225,000. The goods are sold in Ontario and Quebec, as well as in the maritime provinces. Last year Ontario took \$25,000 and Quebec \$40,000 worth of the firm's manufactures. Help is paid every two weeks.

Frank Murphy, confectioner in the employ of Ganong Bros., said he has been with the firm for about six months. Previous to coming here he worked nine years in the United States. The wages of journeymen run from \$12 to \$25, the average being \$15. Considering the cost of living in the United States, wages are better in Canada than there. There are 3 boys and 5 girls employed in his department. Boys going in get \$4 a week, with a yearly advance. The conveniences and appliances of the factory compare favorably with those of similar establishments in the United States. The operatives here are superior to any with whom he worked in the States. They work ten hours a day and get continuous employment. He is satisfied with ten hours work and thinks that more work can be done under the ten-hour than under the eight-hour system.

George H. McAndrews, foreman of Ganong Bros. factory, was called next. He controls the hiring and discharging of help. The age of the youngest girl employed in the factory is sixteen, of the youngest boy, fifteen. Workmen can get rentals for from \$80 to \$100. The average wages paid to skilled labor is \$15 or \$16 a week. The habits of the hands are good. There are never any strikes, and no necessity exists for them. The factory runs the year round. There is no system of fines in vogue. Girls are paid from \$2 to \$4 a week. He does not think that women can do as much as men.

George Jones, soap-maker in the employ of the St. Croix Soap Company, said the average wages paid the hands is \$9 a week. They get double pay for extra time. Two boys are employed at \$5 a week. Boys are simply helpers and do not go to learn the trade. The employes are paid once a week in cash.

William Gibson, an upholsterer in Vroom Bros.' furniture factory, said the hands are not often required to work overtime, and when they do they are paid at the rate of time and a half. One apprentice is employed in his department. There is no great difference between the wages paid in St. Stephen and Calais and little in the cost of living in the two places.

Hiram Mills is employed in carbonized stone drain-pipe work. When not doing that he works as a carpenter. The wages of carpenters run from \$1.75 to \$2 a day, and they get about eight months' employment in the year. He has lived in Fredericton and along the St. John River. The cost of living is greater here than there, but the pay is better. The carpenter trade is good and quite a number are employed at it here.

John Leiner is a fixer in the St. Croix Cotton Mill. Previous to coming here he worked satisfactory in the mill. A

T. M. Boyd works in the employ of C. N. Vroom and makes wigwam slippers. There are 9 employes in his department. They work by the piece and the average pay is \$8 or \$9 a week. There are no girls employed.

N. E. Sederquest, cabinet-maker for Vroom Bros., works by the day and averages \$11 a week. It is difficult to obtain cabinet-makers. Business is better here than in Calais. He has worked in Minnesota. Wages are better here than there, when the cost of living is taken into consideration. He knows mechanics who left St. Stephen for the West some time ago and were glad to get back. There are planers, circular and jig saws, and the usual machinery for furniture making in the factory. The machinery is well enough protected to prevent accidents. A number of persons whom he knows live in Calais and work in St. Stephen.

J. M. Murchie was summoned before the commission to give a statement concerning the condition of the country now as compared with that of a few years ago. He said the price of the necessaries of life is lower now than ever before. While \$10 per barrel had to be paid for flour ten years ago, an excellent grade can now be obtained for \$5.25. The price of beef and of pork has not changed appreciably, while tea and coffee, sugar, and other household articles are much lower. Ten years ago grocers gave 7 or 8 pounds of sugar for \$1, they are now able to give 12 pounds for \$1. Canadian sugar is equal in quality to that refined in the United States. There is no "combine" among the wholesale dealers here and no difficulty exists among the traders. The trade of the town is in a healthy condition, as it has been for several years past. The retail trade has not increased as largely as it might, because of the establishment of country stores in different parts of the country. These take large portions of the trade formerly done in town and prevent the rapid increase of retail trade. The wholesale trade of the town is largely increasing from year to year. The industries started here during the past few years have greatly assisted trade, and without them the business of the town would be in a bad way. Business was never any better for the grocers than it is now. The price of fuel has not changed very much in several years. Hard wood sells at about \$4 a cord and soft wood at \$2.50. The working people burn both wood and coal. Hard coal is worth about \$5.50 a ton. Considerable soft coal, worth about \$4.50, is burned. There is not much difference between the price of clothing in Calais and St. Stephen. Woolens and the cheaper grades of boots and shoes are lower on this side, and shipments of boots and shoes are made to Calais from Canadian houses. The prices of these goods are lower than they were ten years ago. The price of potatoes last fall was about \$1 a barrel. The prices were higher last fall than usual. There is very little poverty among people able to work, and they are more temperate than they were five years ago. The educational system of New Brunswick is one of the best in the world, and St. Stephen has some of the best schools in New Brunswick. House rents are higher than formerly. The tendency is toward better houses and more comfortable homes, and rents are much lower than in the United States. The taxes of men without property in town amount to from \$7 to \$10 yearly, and men with a small property are taxed from \$12 to \$15. Mr. Murchie gave to the commission a very interesting description of the improved condition of the farms and farmers of the country, as instanced by their use of labor-saving machinery and the introduction to their homes of many of the luxuries of life. — THE ST. CROIX COURIER (ST. STEPHEN, N. B.), May 10, 1888.

SILVER-LEAD ORES OF MEXICO.

I have made a careful study of the Mexican business, having spent four out of the last six months in that country, and I think I know whereof I speak. At least 95 per cent. of the ores brought to this country are from Mexico.

citizen of Colorado and one who has the interests of the State at heart, I believe that it would be a great thing for our mines if we could have 500 tons per day of these ores in Denver. At least 75 per cent. of our ores are either refractory or are entirely free from lead, and if our smelters had such a product it would enable them to treat a much larger quantity of these ores, thus giving the miners a better price for their product and also giving employment to a good many more men.

Denver and Pueblo are to-day smelting at least 1,000 tons of ore daily. About 75 per cent. or 750 tons of this is Colorado ore. If by getting a good fluxing ore to mix with ours, the smelters would be enabled to reduce the price of smelting \$2 per ton, this alone would about wipe out the \$600,000 which J. L. H. claims was lost to this country by non-payment of duties. Again it must be borne in mind that the importation of 15,000 tons of lead in 50,000 tons of ore paid something to our railroads and gave employment to quite a number of men. The great bulk of this ore came through El Paso on which our railroads received at least \$7 per ton, so that it is safe to say that at least one-half of this \$600,000 was paid out for freights in this country.

AMEND THE FREIGHT RATE.

The distance from El Paso to Denver is only 785 miles, and our people instead of advocating the placing of a duty on these ores should see to it that the railroads give us a lower rate of freight than Kansas City, which is at least 500 miles farther from this point of shipment. When the railroad was completed to Aspen there was a great demand for these ores, but to-day, owing to some refractory matter contained in them, they are rather a drug on the market, or I should say a much higher charge is made for smelting them simply because the smelters are short of good fluxing ores. If Aspen alone could get its ores treated in Denver for \$2 per ton less than at present it would make a difference to that camp of at least \$150,000 per year. This is very conservative figuring. If the railroads would allow us to compete with Kansas City and enable us to handle these Sierra Mojada ores, our smelters could easily handle all the refractory ores which might be offered, and pay good prices for them. I saw the analysis of one lot of ore — 100 tons — shipped from Mexico, which while it only contained 15 per cent. lead, the excess of iron and lime over silica was 33 per cent.

It is well known that the English are heavily interested in Mexico both in mining and smelting, the Chihuahua smelter being one of their properties, and all the bullion made in Mexico goes to England. The price of lead in New York is governed by that of London, and in order to prevent them from shipping into this country our price is always a few points below that of theirs with duty added. One concern in Mexico, not a very large one at that, ships 300 tons of lead bullion per month to England via the United States, as it is carried through our country in bond. The English find that the shipment of ores containing lead into this country is hurting their bullion trade and they naturally want it stopped. Supposing the 15,000 tons which J. L. H. claims were shipped into this country last year had gone to England in the shape of bullion, would it not have affected the market there and had a corresponding effect on the New York prices? If J. L. H. is correct in his figuring that the importation of 15,000 tons of lead into this country from Mexico affected the price here to the extent of one-half a cent per pound, it is natural to suppose that this same quantity of lead imported into Great Britain, in the shape of base bullion, would have had the same effect upon the English market.

THE GREAT SMELTING CENTER.

I believe that the United States should be the great smelting country of the world, and large quantities of ores in our mountains, still many of them are of a refractory nature when they can assist us

CARAVAN TRAFFIC IN ASIA MINOR.

There are at least three great routes of traffic which would be affected by the proposed railroad in Asia Minor, viz: The Suez Canal and the caravan routes from Trebizond, on the Black Sea, and from Alexandretta, on the Mediterranean. The traffic between Alexandretta and Aleppo alone employs ten thousand camels. The cost of transporting a ton of goods from Aleppo to the sea-coast is, I am told, £4 to £6, a sum quite prohibitory of a large class of goods. With the cheaper rates allowed by a railroad it is safe to say this traffic, already considerable, would be increased tenfold. While this particular route is not covered by the proposed railroad referred to, these facts may be taken as an indication of the amount of through traffic which would be diverted to a railroad connecting Constantinople with the further East. —SIVAS, ASIATIC TURKEY, *May 18, 1888.*

H. M. JEWETT,
Consul.

TEAS OF FORMOSA.

The tea season of 1887-'88 is now practically closed at this port, as the last of the crop of Amoy and Formosa oolongs grown in 1887 has been sold and gone forward to New York during the last month. New teas, grown this year, will begin to arrive by the 1st of May. The crop of 1887 moved very slowly, owing to the unsatisfactory prices prevailing in the United States, where over 90 per cent. of the teas of Formosa and Amoy find a market; 18,297,617 pounds having been exported from this port to the United States during the past year, against 18,022,877 pounds during the year preceding. Prices have averaged lower during the past year than the previous year.

The quality of the crop was a good average as compared with former years. Perhaps the Amoy oolongs did not maintain their quality quite as well as those of Formosa. The Chinese do not seem to make any progress in the care of the tea-plant or the caring of the leaf; nor do they seem to consider the commercial reputation of their teas as of any consequence; hence, evidences of improper handling and adulterations are not unusual. They are trifling with the future of their great staple with reckless temerity. The local taxes, squeezes, and the export duty, the latter being assessed without regard to value or quality, are injuring the trade in China, and in a corresponding ratio stimulating the tea industry in Japan, India, and Ceylon.

During the closing months of the past tea season the export duty alone was fully 30 per cent. of the market price of Amoy oolongs. This is a short-sighted policy, which will, if persisted in, with other causes bring lasting injury and sure but lingering decay upon the tea trade of China. —AMOY, *April 20, 1888.*

WM. S. CROWELL,

FOOCHOW TEA TRADE.

A few musters of tea were sent around on the 29th of May, but owing to a dispute with the tea guild as to the terms on which buying was to be conducted musters were withheld and business was suspended. An agreement having been arrived at, musters were again sent around on the 10th of June, and the market was then fairly opened. Prices averaged from 20 to 30 per cent. lower than at the opening of the market in 1887. The quality of the tea was generally inferior.

The first steamer for London left on the 20th of June, 1887, and the last on the 3d of April, 1888, the season having extended over a much longer time than usual.

The first invoice for the United States was certified on the 11th of June, 1887, and the last on the 24th of March, 1888.

The total export during the season, as per customs returns, was 99,087,467 pounds, including 6,300,000 pounds of brick tea shipped north in March, April, and May, 1887, the season for the movement of brick tea not entirely coinciding with the general tea season. Of this there were sent to—

	Pounds.
Europe.....	46,178,506
Australia and New Zealand.....	23,810,303
America.....	5,247,129
South Africa.....	1,480,746
Coastwise, south.....	3,689,226
Coastwise, north.....	18,681,557

Of the tea sent to Europe 44,549,478 pounds are reported as for London and 1,052,728 pounds as for the continent.

Of the tea sent coastwise north, 15,675,034 pounds were brick tea for Russia, via Tientsin. The tea is described as—

	Pounds.
Congou.....	67,709,617
Souchong.....	6,343,840
Oolong.....	4,736,915
Scented Orange Pekoe.....	3,924,590
Scented Caper.....	93,331
Flowery Pekoe.....	276,345
Green and sorts.....	58,235
Mixed.....	269,560
Brick tea.....	15,675,034

The total exportation was 3,468,775 pounds less than the preceding season. The export of brick tea was, however, 6,748,929 pounds more than

EXPORTS:

	Pounds.
Oolong and Souchong	3,493,222
Congou and Souchong.....	1,161,444
Scented Orange Pekoe.....	10,963
Flowery Pekoe	1,951
Mixed and undescribed.....	6,785

DISTRIBUTION:

New York received.....	4,204,278
San Francisco received.....	423,401
Chicago received.....	51,276
Philadelphia received.....	25,410

Of the tea sent to New York 28,276 pounds went via Hong-Kong and San Francisco, 2,600 pounds via Hong-Kong and unknown routes, 213,252 pounds via Amoy, 351,050 pounds via London, 120,433 pounds via Vancouver, 3,488,667 went direct, of which 5,133 pounds were in bond for Boston. That sent direct was carried in seven British steamers, which took part of their cargoes at other ports.

The tea for San Francisco was all sent to Hong Kong to be forwarded thence, 130,851 pounds by steamer and 292,550 pounds by sailing vessel. This amount to San Francisco does not include the 130,851 pounds sent to San Francisco in bond for New York.

Most of the tea invoiced for Chicago and Philadelphia was sent via Vancouver by the Canadian Pacific steamers, which carried in all 190,605 pounds of that sent to the United States.

The invoiced value of all the tea sent to the United States was only, Mexican \$938,222.27 = United States gold \$736,588.36; the previous season it was, Mexican \$1,567,408.43 = United States gold \$1,277,153.17.

It will be noted that considerable tea intended for Canada, which in former years was sent via New York or San Francisco, was the past season shipped direct to Vancouver by the steamers of the Canadian Pacific line.

During the season sixty-nine British steamers cleared for London, fifteen for Australia and New Zealand, and seven for New York. No other vessels are reported as having taken part in this trade. Most of these vessels took part cargoes at other ports.

The whole tea trade of Foochow is in a most unsatisfactory condition. Merchants see no prospect for the revival of the trade unless measures are taken to put China upon an equality with Indian teas by a reduction in the heavy internal taxation and export duty, improved methods of preparation, and better facilities for internal transportation. But no one here expects the Chinese Government to give up its exactions or that the other desirable changes will be soon adopted.

Shippers of fine teas to London are said to have made profits this year solely because there was a scarcity in fine teas from Hankow. But in cheap teas losses are generally reported.

tity of poor tea that loss has quite generally followed shipment. The Chinese dealers complain that they also have suffered severe losses.

The Russian brick-tea trade is alone supposed to be flourishing.—FOOCHOW,
April 19, 1888.

J. C. A. WINGATE,
Consul.

POSTAL SAVINGS BANKS IN GREAT BRITAIN.

My object in this report is to exhibit briefly the conspicuous features of that commendable system known as the postal savings banks, apart from the several other systems of savings banks operating throughout Great Britain.

Postal savings banks have been evolved from what had gone before in efforts made to reach that which appears now to represent the sum of the labor and experience of the legislators and philanthropists, who have been hand in hand in the institution and furtherance of a system of savings banks that would meet the high object to be attained through a guaranty of absolute security and economy of operation.

Those persons who have so zealously given their best efforts to the establishment and maintenance of savings banks have looked beyond the direct good to be accomplished in enabling the poor to provide for a rainy day to the indirect larger and nobler purpose of inculcating habits of thrift and frugality, and nullifying, so far as these habits will, the vices of improvidence and intemperance, which are held to be the twin destroyers of families, the order of society, and the stability of nations.

The claim of priority for Great Britain in the establishment of savings banks has never yielded to that of either Germany or Switzerland that they were earlier in the field. During the twenty years subsequent to the year 1778 a number of schemes were conceived tending to results that were afterwards reached both in Great Britain and on the continent. That savings banks were an accepted and recognized institution in Great Britain in 1817 is very certain, for in that year they became the subject of legislation, and, until the establishment of the postal savings banks, they were projected and sustained by private influence and governed and maintained without expectation of profit, but purely through motives of benevolence. This system still exists and is known as the "old savings banks." Their imperfection arises from a want of security of a kind to command public confidence. Being dependent, as they largely are, upon the continued solvency of the trustees, the best intentions toward the depositor does not prevent the occurrence of disasters which shake public confidence and destroy their usefulness, for, while the act of Parliament of 1817 gave greater security as far as it involved the responsibility of the Government, this involvement only comprehended

with the state, the Gov-

as the act fails to fix the liability of trustees, the public may be deluded by a false sense of safety through the supposition that the Government security is ample.

To this cardinal objection to the old system may be added the minor ones, that they are often hampered with rules which, more or less, defeat their object, such as making payments compulsory, placing obstacles in the way of withdrawals, and demanding certificates as to the moral character of depositors, and so forth.

The disposition of the Government to interpose in the matter of savings banks, manifested by the act of 1817, was destined to be more pronounced later, but notwithstanding the frequent agitation of the question, it was not until May, 1861, that legislation that met public expectation was enacted, and a bill, entitled "An act affording additional facilities for depositing small savings at interest, with the security of the Government for the due repayment thereof," was passed, thereby establishing the postal savings banks. This bill was offered and its passage secured through the exertions of Mr. Gladstone, who was at that time chancellor of the exchequer, and to him is freely accorded the excellence of its details. It is said that the country at once recognized the universal boon of a bank maintained at the public expense, secured by the public responsibility, with virtually the whole Empire for its capital, with a branch in every town, and its doors open at all hours, and securing to the depositor a fair amount of interest. That the public appreciated the good to come of this institution is evinced by the alacrity with which it bestowed its patronage. On the 16th day of September, 1861, the post-office savings banks were opened to depositors, and on that day 435 deposits were received. At the end of the following year 2,535 offices were open, and nearly £2,000,000 had accumulated, while ten years later, so manifest was the hold upon popular regard, the number of depositors had increased to nearly one and a half millions, and the amount of deposits, including interest, reached something more than £19,000,000.

The last data attainable cover the completions of the workings of the system for a quarter of a century, and mark the amazing progress of the institution in public favor. The end of the year 1886 found the number of depositors increased to 3,731,421, and the amount to their credit standing at £50,874,338. At this time nearly every money-order post-office in the Kingdom had a savings bank attachment, the offices numbering 8,351. If reckoned from the number of accounts open at the end of the year, one person in every ten of the population had availed himself of the privileges of these banks, or, if reckoned from the number of deposits, about one person in every five. It is especially interesting to note that a great preponderance of the depositors were of the poorer classes, indicating that the benefits of the institution were being enjoyed by those for whom it was intended, and that the object of the founders and promoters of the scheme has been eminently realized. The effect of the growth and development of the post-office savings banks upon the old

was 640 in 1861 to 404 in 1886. The number is being further reduced by constantly recurring transfers of accounts from the old banks to the new. The policy of discontinuing the old savings banks altogether, or, at any rate, withdrawing what Government support they receive, has been actively advocated in influential quarters, it being urged that the continued maintenance of the old system, involving considerable annual expense, is a waste of charitable effort, as the post-office savings banks offer so many more facilities. Great Britain has long since extended this system of banks to her colonies, and postal savings banks are an established institution in Canada and Australia. We find that France, Germany, Austria, Italy, Belgium, Holland, and Japan all have in successful operation this system of savings banks. The postmaster-general says in his last report that information concerning the system has been asked by several other governments.

In what follows I shall endeavor to explain the details of operation of this system of savings banks, together with something of the plans of annuities and life insurance which are operated in conjunction with it. All of the 8,351 postal savings banks in the United Kingdom are authorized to receive and disburse deposits. These are distributed and governed with the sole view of public convenience, and to accommodate the largest class of patrons, which is composed of the working people. Business is continued until a late hour of the day, and on Saturday deposits are received up to 8 p. m.

Deposits of 1 shilling, or any number of shillings, are received, subject to the limit of £30 in one year or £150 in all, exclusive of interest. When the principal and interest together standing to the credit of any one depositor amounts to the sum of £200 all interest ceases until the amount is reduced. Interest at the rate of $2\frac{1}{2}$ per cent. per annum is allowed on every complete pound deposited, and is computed from the first day of the calendar month next following the day on which a complete pound shall have been deposited, or on which deposits of less amounts shall have made up a complete pound, up to the first day of the calendar month in which moneys are withdrawn. The interest is calculated on December 31, and at that time credited to the account of the depositor. Additional deposits are also received for immediate investment in Government stock for the payment of premiums on insurance and for the purchase of annuities. No account is opened for a deposit of less than 1 shilling, but a person wishing to save as little as 1 penny can do so by the purchase of a penny stamp, which is to be affixed to a form that may be obtained at any post-office. When twelve stamps have thus accumulated an account may be opened.

Every depositor, on making his first deposit, is required to specify his full name, occupation, and place of residence, and make and sign a declaration which pledges that he will abide by the regulations, and that he has no deposit in any other post-office savings bank in Great Britain or Ireland.

who receives the deposit.

years of age, and repayments are made to such minor after the age of seven years in the same manner as if he were of full age. Under the age of seven the declaration must be made by one of the parents or a friend on behalf of the minor.

Deposits and withdrawals are allowed to be made by married women separate and distinct from the control of their husbands. Deposits may be made by a trustee on behalf of another person in the joint names of such trustee and the person on whose account such money shall be so deposited; but repayment of the same, or any part thereof, will not be made without the receipt of both of said parties or the survivor, or the executors or administrators of the survivor. Trustees of any charity, provident, or friendly society, or penny or school bank, or other savings bank, which have been approved by the proper authorities, may deposit their funds without restriction as to the amount in the post-office savings bank, provided always that such deposits shall not be of less amount than 1 shilling nor of any sum not a multiple thereof. Deposits are immediately entered in the depositor's book by the officer receiving it, said officer affixing his signature and the stamp of his office to each entry. In addition to this each deposit is acknowledged through the post by the savings bank department at London. This acknowledgment will be addressed to any designated post-office to be called for.

Once in each year, on the anniversary of the day on which the first deposit was made, if possible, the depositor is expected to forward his deposit-book to the controller of the savings bank department at London for comparison with the books of that department, and for the adjustment of the interest. When a depositor wishes to check out or withdraw the whole or any part of the sum standing to his credit he must make application for the same on a printed form which is furnished him. This form, properly filled up, is to be forwarded by post, as if an ordinary letter, to the department at London. In return he receives a warrant for the amount required, which warrant is cashed at any post-office savings bank. These forms, as well as the deposit-books, are passed through the mails without any postal charges or postage-stamps whatever.

While the greatest facilities are offered, and no unnecessary delay is occasioned by the requisition for withdrawals having to go to London, yet, the inconvenience to those living at a considerable distance from London may, at times, be important, and the question of having several centers through which warrants for withdrawals may be issued is being discussed. As an offset to this inconvenience, however, the great boon of virtually having a bank account at once in many places is urged; for, practically, this is true, as deposits can be made or withdrawal warrants secured and made payable in any of the thousands of existing banks, and a depositor may be said, indeed, to carry an account in every city and town throughout the United Kingdom.

The limit of the

in competition with the banking community. No very great amount of complaint is made against this restriction, as some relief is found in the investments allowed in Government stock, annuities, and life insurance. The regulations governing these are to be next mentioned. Depositors can become holders of Government stock through the medium of the post-office savings banks. Not less than £10 can be invested at one time, and not more than £100 will be credited to an account in one year, or £300 stock in all. For the purpose of these investments deposits may be made to the value of £100. These sums are altogether irrespective of the limits of ordinary deposits.

The postmaster-general is empowered to insure the lives of persons of either sex for not less than £5 or more than £100. An insurance may be effected by any person not over the age of sixty-five or under the age of fourteen years, or, if the amount does not exceed £5, not under the age of eight years. The postmaster-general is also empowered to grant immediate or deferred annuities for not less than £1 or more than £100 to any person not under the age of five years.

All persons whose lives are insured, or to whom annuities are granted, have direct Government security for the full payment of the money at the proper time. All premiums for life insurance or annuities are payable through the medium of the savings banks deposit accounts, and will be accepted in addition to ordinary deposits and deposits for immediate investment in Government stock.

All persons insuring their lives or purchasing annuities necessarily become, if not so already, savings bank depositors; their premiums are, without any trouble to them, deducted from their deposits. The money in the bank can be increased by deposits of not less than 1 shilling in any post-office savings bank, or by the use of the penny postage-stamp slips the provision can be made in sums of 1 penny at a time. Furthermore, a person may direct that the interest on money deposited may be applied to the purchase of an annuity or the payment of the premium of life insurance.

The subjoined table clearly indicates the steady progress and development of postal savings banks since their foundation, in September, 1861, to the close of December, 1886. The low cost of management may be noted, and is especially remarkable when it is known to include the extraordinary expense of putting the system into operation.

It will be seen that the average amount standing to the credit of each open account has maintained singular uniformity through the series of years which the table includes, and marks, unerringly, the fact that the people of small means are those who are more largely being benefitted by the system.

}} include in this

Year.	Number of post-office savings banks,	Number of deposits.	Amount of deposits.	Cost of management.	Number of accounts remaining open at close of the year.	Amount, inclusive of interest, standing to the credit of all open accounts at close of the year.	Average amount standing to credit of each open account at close of the year.
From Sept. 16, 1861, to Dec. 31, 1862.....	2,535	639,216	£2,114,669	£20,591	178,495	£1,698,221	£. s. d. 9 10 3
1863.....	2,991	842,848	2,651,209	25,401	319,669	3,377,480	10 11 4
1864.....	3,081	1,110,762	3,350,000	45,856	470,858	4,993,123	10 12 1
1865.....	3,321	1,302,309	3,719,017	49,527	611,384	6,526,400	10 13 6
Average, 1866-'70.....	3,815	1,802,031	5,232,108	62,803	967,066	11,632,214	12 0 6
1871.....	4,335	2,362,621	6,664,629	69,427	1,303,492	17,025,004	13 1 2½
1872.....	4,607	2,745,245	7,699,916	78,404	1,442,448	19,318,339	13 7 10
1873.....	4,853	2,917,698	7,955,740	84,160	1,556,645	21,167,749	13 11 11½
1874.....	5,068	3,044,692	8,341,256	99,616	1,668,733	23,157,469	13 17 6½
1875.....	5,260	3,132,433	8,783,852	122,325	1,777,103	25,187,345	14 3 5½
1876.....	5,448	3,166,136	8,982,350	125,912	1,702,374	26,996,550	15 17 1¾
1877.....	5,668	3,267,851	9,166,738	152,184	1,791,240	28,740,757	16 0 11
1878.....	5,831	3,360,636	9,485,391	448,543	1,892,756	30,411,563	16 1 4
1879.....	6,016	3,347,828	9,887,109	192,280	1,988,477	32,012,134	16 2 0
1880.....	6,233	3,755,689	10,301,152	188,891	2,184,972	33,744,637	15 8 11
1881.....	6,513	5,699,876	11,867,155	200,574	2,607,612	36,194,495	13 17 7
1882.....	6,999	6,151,469	12,821,230	221,653	2,858,976	39,037,821	13 13 1
1883.....	7,369	6,297,368	13,575,167	248,180	3,105,642	41,768,808	13 9 0
1884.....	7,756	6,458,707	14,510,411	248,618	3,333,675	44,773,773	13 8 7
1885.....	8,106	6,474,484	15,034,694	256,402	3,535,650	47,697,838	13 9 10
1886.....	8,351	6,562,395	15,696,852	290,555	3,731,421	50,874,338	13 12 8

The average percentage of cost of management for the whole number of years to the total funds in possession of the post-office savings banks is something less than five-eighths of 1 per cent. It will be noted that the money specified in above table is British. The value in dollars can be closely approximated by multiplying by five. The increase above shown in the cost of management in 1864 is caused by the payment during that year of various charges belonging to 1863. The outlay for management in 1878 includes the sum of £214,434 for arrears of postage for the nine years from April 1, 1868, to March 31, 1877, and also £73,419 paid on account of buildings for offices. In 1879 and 1880 the cost includes the sums of £25,564 and £16,373, respectively, paid for the same purpose. These several sums are taken into account in the calculation which brings the expense of management to the remarkably low rate of five-eighths of 1 per cent. — LEITH, *April 2, 1888.*

WILLOUGHBY WALLING,
Consnl.

RAILROAD IN CORSICA.

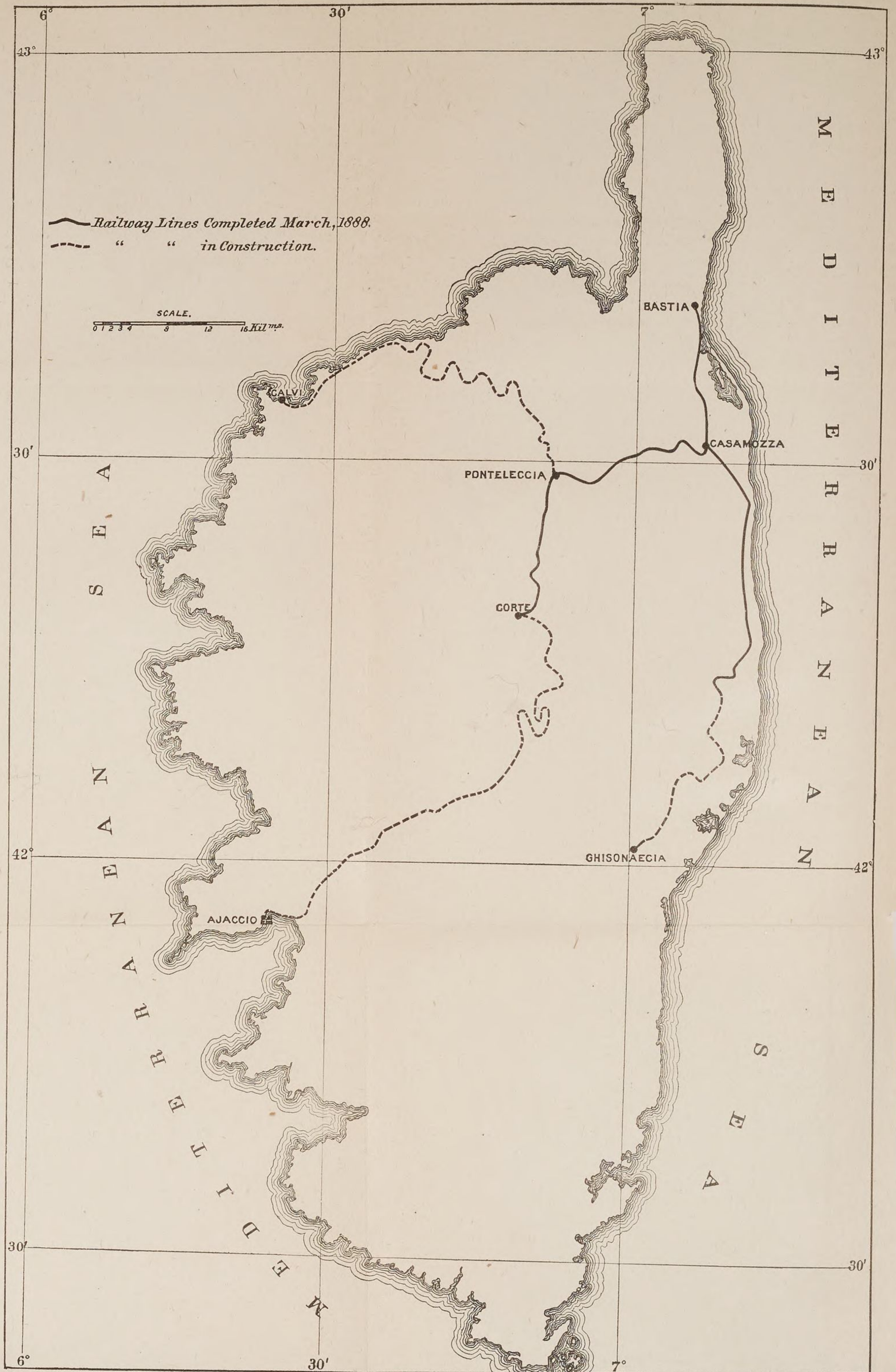
Until February 1, 1888, the population of Corsica had been in the unique situation of a people civilized, intelligent, and equipped with telegraphs, steamship communications, and many other modern improvements, but entirely destitute of railroads. The first Napoleon included his native island in the superb system of graded and macadamized roads which were extended throughout France, and during nearly the whole of the present century the postal service, by diligence, has been as good in Corsica as in almost any part of the continent. The stage journey between Bastia and Ajaccio has been famous among travelers for generations. Over these smooth, hard, carefully-tended roads freight has been hitherto transported in trains of carts, each drawn by from two to four or five mules or horses geared tandem, and capable of hauling down from the interior to the villages, and ports along the coast, immense loads of lumber, charcoal, fruits, wine, and other products of the island.

But railroads are an essential adjunct of modern commerce; without them the mines of iron, lead, copper, antimony, and zinc in the interior could not be profitably worked, and the export trade of the island could not compete with that of Italy and France. Accordingly, soon after the organization of the present French Republic the Corsican deputies began to demand for their picturesque island a railway system which, besides its commercial advantages, might, in case of war with a foreign power, become essential to a successful defense. The Corsicans, with their peculiar character and history, are not generally business men; there are few wealthy capitalists among them, and the railroads could not be built as a local enterprise. The high range of mountains which traverses the island from Cape Corso to Bonifacio, the spurs of which in many places run down to the coast and terminate in abrupt headlands, would necessarily make the work of construction expensive, while the high cost of operating lines involving heavy gradients and enjoying only local traffic rendered the profit of the undertaking more than doubtful.

The national Government came to the rescue and surveyed the main line from Ajaccio, the capital, to Bastia, the principal sea-ports. These cities are about 95 miles apart, and the road from the one to the other crosses the central mountain range near its center and divides the island into two nearly equal sections. Work was begun at Bastia, on the northeastern coast, seven years ago, and on the 1st of last month the road was opened for traffic as far as Corte, the ancient capital, a distance of 45 miles. The track has a gauge of 1 meter (39.37 inches), and the work was so difficult, by reason of the high grade and numerous rock cuttings to be overcome, that even in that country of cheap labor, has been \$33,250 per

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CORSICA.



From Corte to Ajaccio, on the west coast, the distance is 50 miles, over a large part of which distance the line is graded, but the tunnel, which pierces the mountain near the summit, 10 miles south of Corte, is a difficult and costly task which can not be finished in less than a year, so that it will be probably two years from this date before the entire route will be completed.

From Ponte Leccia, in the valley of the Golo (see accompanying map), a branch, 46 miles in length, leads northward to Calvi, an important port on the western coast. This branch is also in course of construction, and will be finished in two years.

On leaving Bastia the railway runs due southward along the eastern coast to Casamozza, in the valley of the Golo, where it turns abruptly westward and ascends the valley of that stream to Ponte Leccia. From Casamozza a branch, 39 miles in length, extends southward along the shore, through the most fertile part of the island, to Ghisonaccio, where the plain ends and the mountains come down abruptly to the sea. Of this branch 29 miles, or nearly two-thirds, is finished, and was opened to traffic last month, so that two-fifths of the entire contemplated system is at present in operation. The branch from Casamozza to Ghisonaccio presented no difficulties, and cost only \$18,000 per mile.

The main line, from Bastia to Ajaccio is a national work, built by Government engineers at the expense of the state. The branches to Calvi and Ghisonaccio are being built by departmental companies with money furnished by the state, upon which the companies guaranty a certain annual interest.

The effect of the system, when completed, upon the prosperity and progress of Corsica can not fail to be important and valuable. Products of the interior, which have hitherto been almost worthless for want of a market, will then become valuable, and the purchasing power of the people will be correspondingly enhanced.

At present Corsica exports to the United States little except candied citron, and receives in return petroleum and leaf tobacco, which last may be imported free of duty under the special tariff law which applies to Corsica. If Corsican wines were as well known in our country as they deserve to be a large American trade in them might be developed. There are almost no manufactures on the island, and it offers a promising market for cotton goods, sewing-machines, farming tools, and general hardware. Corsica belongs to the consular district of Marseilles; the only United States consular agency in the island being at Bastia, while Great Britain maintains an expensive consulate at Ajaccio and vice-consulates at Bastia and Calvi.—
MARSEILLES, *March 13, 1888.*

FRANK H. MASON,
Consul.

PROJECTED RAILWAYS IN THE PHILIPPINE ISLANDS.

I have the honor to report that there are no railways in operation at present in any of the Philippine or Caroline Islands, but that two projects to construct railways on this island (Luzon, of the Philippine Archipelago) have been authorized by royal decree of the Spanish Government. The first is under a grant from the Government to an English firm in Liverpool, represented in Manila by the mercantile firm of Smith, Bell & Co. It is proposed to build a line from Manila to Antipolo, a distance of 18 miles, where a religious festival is held once a year, which is attended by a great number of pilgrims. A large revenue from the passenger traffic is expected during this festival. Antipolo is a central point in the hemp and sugar districts, and, being in the interior, all produce must be hauled to the sea-shore or to Manila in buffalo carts, very little reaching this city by the latter means as the roads are at times impassable and always in bad condition. It is expected that this road will open up to trade a section of country which has heretofore yielded very little to the markets of the Occident. It will also penetrate the mountainous district, in which the scenery is grand and beautiful beyond description, and, being much higher and dryer than the land on which Manila is situated, will furnish most charming building sites for the foreign residents of this city. It is expected that large numbers of country villas will be built along the line of the road and that a very profitable passenger business will be the result. No work has been done on the road-bed yet, and the representatives here are awaiting orders from the projectors in England. It is considered possible that work will be commenced within a few months.

The second project is more important. It is that of a corporation called "The Manila Railway Company, limited," authorized under royal decree of the Spanish Government, dated April 9, 1885, July 14, 1886, and January 21, 1887. The board of directors is composed of George Noble Taylor, chairman of the Madras Railway Company, chairman; Alexander Hubbard, director of the Great Western Railway Company; Hanbury Barclay; Edward Ford Duncanson, member of the London committee of the Hong-Kong and Shanghai Banking Corporation; G. R. Young, of the firms of Smith, Wood & Co., Liverpool and London, and Smith, Bell & Co., Manila; and Charles J. C. Scott, director of the Union Bank of Spain and England. The offices of the company are at No. 60 Old Board street, E. C., London, England. The chief engineer is George Higgin; the auditors, Messrs. Deloitte, Dever, Griffiths & Co., No. 4 Lathbury, E. C., London; and the secretary, H. B. Briggs.

The company is formed for the purpose of constructing and working a railway starting from a point in the district of Tondo, Manila, and terminating at Lingayen, its length being about 120

way and rolling stock are to revert to the Government without compensation. The line already surveyed runs through a very fertile and populous country, and it is confidently expected that it will do an exceedingly large freight business. Should the expectations of the projectors be realized advantages will undoubtedly accrue to the trade of the United States, as the greater part of the produce goes to our country. Last year more than half the sugar and hemp shipped went to the United States. In 1886 198,185 tons of sugar were shipped, 70,000 tons being sent to the United States. The indications are that the shipments this year will largely exceed that figure, my invoice-book for the first quarter showing goods to the value of \$1,235,358.54 already shipped to American ports. The business, too, is almost entirely in the hands of English firms, there being only one American firm here, and that scarcely two years old. Manila has a population of about 300,000; this island (Luzon) is believed to have over 4,000,000, and the entire Philippine group over 7,000,000. The interior has never been developed, and the commercial possibilities are considered vast and unlimited, the natural wealth of the islands in hemp, coffee, sugar, and tobacco having been fully shown. The construction of the projected railway to Dagupan will, of course, largely increase commerce at Manila, and if our country maintains its relative position in the trade with the Philippines it must be materially benefited.

When the road will be commenced is a matter of conjecture, as nothing has been done except so much as has been necessary in order to comply fully with the terms of the concessions, which require that the work be commenced by the 21st of July, 1887, and completed July 21, 1891. Foundation stones have been laid at the termini, and December last the first spikes were driven with elaborate and imposing ceremonies. No more work was done, but engineers were sent out by the contractors. Hett, Maylor & Co., of London, have been here looking over the line, and it is said that a large force of native laborers has been engaged for the work of grading. The country through which the line is expected to run is inhabited almost entirely by the natives—Malays—who live upon rice, fruit, and fish almost exclusively, and wear little or no clothing. Their needs are very promptly supplied by the enterprising Chinese, who establish little stores wherever they can find a convenient place. I believe that there are rare fields here for American enterprise and capital, which would be much improved by the building of this road. — MANILA, PHILIPPINE ISLANDS., *April 4, 1888.*

ALEX. R. WEBB,

Consul.

GUATEMALA CENTRAL RAILROAD.

I propose to confine the subject of this dispatch to a history of the Guatemala Central Railroad, an enterprise which, after much serious tribulation, has become the greatest and most important American interest throughout Central America as yet successfully established. On the 16th of August, 1871, Mr. William F. Kelly a British

José, on the Pacific coast, and the capital city of Guatemala. Although three distinct contracts were made by the Government with Mr. Kelly, extending between the years 1871 and 1876, all these contracts failed from lack of pecuniary ability on the part of the contractor, and were declared forfeited by mutual consent. During the year 1876 Mr. William Nanne, an American citizen, at that time general manager of the Costa Rica Railway, was summoned by the Guatemalan Government to build the railroad between the port of San José and Escuintla, a town midway to the capital. Before entering into any contract a regular survey was made on Mr. Nanne's account by the American engineers, Messrs. N. M. Corson and William P. Collins, during the latter part of the year 1876 and the beginning of 1877. On the strength of this survey Mr. William Nanne obtained a concession from the Guatemalan Government on the 7th of April, 1877, and the road was built and opened to traffic on the 19th of June, 1880, three months before the contract period terminated. On the 13th of July, of the same year, a contract was entered into between the Government and Mr. Nanne for an extension of the line from Escuintla to the capital city Guatemala. This contract was duly carried out, and amid the roar of cannon, the shouts of the assembled multitude, and the city freshly whitewashed and gaily decorated, the road was declared open for traffic on the 1st of September, 1884.

Mr. Nanne's first concession, which included the railway under construction from San José to Escuintla, was incorporated by him under the laws of the State of California in 1878, by the name of the Guatemala Central Railroad Company. The second concession of July 13, 1880, which was the extension of the line to this capital, was incorporated through New York capitalists under the laws of the State of New York in May, 1882, by the name of the Central American Pacific Railway and Transportation Company, which organization constructed the latter line. Three years subsequently, namely, in October, 1885, these corporations of the States of California and New York were consolidated under a charter granted by the former State, retaining the name of the original company, that of the Guatemala Central Railroad Company, a special act of the legislature of the State of New York having been obtained for that purpose. Political changes and disturbances in Guatemala have created some perplexing questions between the railway and the Government which call for harmonious arrangement and settlement, and which, doubtless, will be properly determined by such judicious and friendly intervention as would naturally suggest itself to our own Government with the view of the protection of so grand and valuable an American enterprise, which must commend itself to both Governments. It is a work of great public utility for the Republic of Guatemala, and one which reflects credit on the ability of Mr. Nanne and the enterprise of our fellow-citizens.

prehend the perfection of landscape scenery meet the eye in a succession of panoramic changes that are indescribably delightful. The towering volcanoes of Aqua and Fuego loom forth, their clear-cut outlines piercing the cloudless sky, with an undulating wave of foot-hills rolling up to their base, while at one point on the road the train skirts Lake Amatitlan, some 5 miles in length and about 2 in width, from whose surface here and there hot springs are continually bubbling and breathing forth steam, a reminder that it is the bowl of an old volcanic crater with hidden fires now slumbering beneath its placid bosom.

The Guatemala Central Railroad runs from the port of San José, on the Pacific coast, latitude $13^{\circ} 55' 19''$ north, longitude $90^{\circ} 49' 76''$ west, in a general north by east direction, to the capital city of Guatemala. The length of the main line is 71.8 miles. That of the Guarda Viejo branch is 1 mile, with a gauge of 3 feet. The sidings on the road are 2.5 miles, with a distance of 1 yard between the rails, making a total track of 75.5 miles. The highest point on the line is 5,010 feet above the level of the sea. The cross-ties, from 2,600 to 3,000 per mile, are about one-half of California red wood and one-half native hard wood. The total cost of the road is \$2,500,000; gross earnings during 1887, \$423,873.63; expenses, in silver pesos, \$212,267.84; net earnings 1887, \$211,605.79.

The line by its charter is subsidized by the Guatemala Government to the extent of \$100,000 per annum for twenty-five years.

The traffic in 1887, in round figures, was as follows: 10,000 tons of imports, at an average rate of \$21 per ton, \$210,000; 12,000 tons of exports, at an average rate of \$8 per ton, \$96,000; 8,000 tons local, at an average rate of \$6 per ton, \$48,000; 100,000 passengers, \$70,000; total, \$424,000.

The following comprises the rolling stock of the line: 4 43-ton Cooke locomotives, Paterson, N. J.; 4 22-ton Baldwin locomotives, Philadelphia; 1 25-ton Prescott Scott engine, San Francisco; 5 first-class coaches; 6 second-class coaches; 4 combination baggage cars; 21 box cars, 8 tons, 24 feet long; 30 box cars, 10 tons, 28 feet long; 28 flat cars, 24 and 28 feet long, and 6 stock cars. — GUATEMALA, *March 6, 1888.*

JAMES R. HOSMER,
Consul-General.

LABOR AND PRODUCTS IN SANTIAGO.

In the silver and copper mines in the vicinity of Santiago, which I have visited, the miner receives from \$1 to \$1.25 a day, but generally earns more on piece-work; besides this he receives daily a ration of beans or a pound of good bread, and all he can eat at mid-day of a stew composed of cracked wheat, sun-dried beef, called "chargue," onions, potatoes, and beans, and a pound of fresh beef or mutton three times a week, and his lodging. Coal miners earn from \$1 to \$1.25 a day.

pay. In Santiago a laborer receives 80 cents to \$1 a day, and a bricklayer and carpenter \$2. Rents for working people are very low, as the buildings in which they live are of adobe, cheap, and poor. Near Santiago a laborer on a hacienda receives 40 cents a day when employed, a ration or pound of bread and beans, house rent free, and the use of an acre of ground; but far from the cities is paid 10 cents less a day, but receives grass for two cows or two horses as he may prefer. When the "patron" has work they must give him the preference. Farm labor is becoming scarce in Chili and the pay is sure to advance. The working people are hardy, nervous, and energetic; patient, tractable, and respectful, but not servile, and become attached to their haciendas and patrons. As a rule they do not live long, and a large percentage of their children die young.

As to land it is generally held in large tracts, except in the foreign settlements of the south. A thousand acres is considered a small farm, and 3,000 or 4,000 is an average, while many haciendas contain 10,000 or 12,000. The church haciendas are, or were, very large, but fear for the future security of possession has caused many of these to be divided up and sold. All the principal families of Chili own, through inheritance or purchase, large haciendas on which they reside about three months in the year and from which they receive large incomes. Farming in Chili is the most certain and profitable business where irrigation is obtainable. The melting snows bring down from the Cordilleras a rich sediment which manures the ground, constantly adding to its soil, and irrigates the growing crops. The grasses are natural, varied, and nutritious, also a white and yellow clover. Alfalfa sown on coarse gravelly lands, or in beds of dried-up water courses, are inexhaustible and gives three heavy green crops a year. Wild oats grow everywhere in Chili, and after a wet or snowy winter on the Cordilleras the sides of these mountains are covered with luxuriant crops, growing 8 or 10 feet high. I have a bundle of it in my house 8 feet high, the grain of which is very small, brought from a place 4,000 feet above the level of the sea.

Wheat and barley are the two staple crops. Barley sells here from \$3 to \$4 the "fanega" of 155 pounds; wheat from \$3.75 to \$4 a "fanega" of 160 pounds.

Oxen are universally used for draught, and bring, in fair condition, from \$50 to \$90 each. When fattened for the butcher they sell according to weight and condition. Large numbers of oxen are brought from the Argentine, when the snows melt in the summer, and fattened here. Butchers' meat is not retailed by the pound, as with us, nor is it cut up in the same way. It is sold by the piece. All the meat consumed in Santiago is slaughtered for so much a head at the "matadero" or municipal slaughter-house, the receipts for which for the month of December amounted to nearly \$13,000. The number and kind of animals slaughtered were as follows: Horned cattle, and hogs, 550—a large con-

PRODUCTIONS OF CHIHUAHUA. — Vice-Consul William Heimke sends the following under date of February 10, 1888:

The principal production within my consular district is silver, with some gold, of which there was coined at the mint in this city during the fiscal year 1886-'87 —

Denomination.	Number.	Amount.
Silver pieces of \$1	2,621,873	\$2,621,873 00
Silver pieces of 50 cents.....	26,272	13,136 00
Silver pieces of 25 cents.....	26,300	6,575 00
Silver pieces of 10 cents.....	40,360	4,036 00
Silver pieces of 5 cents.....	31,240	1,562 00
Gold pieces of \$20.....	299	5,980 00
Total.....		\$2,653,162 00
Coinage of the fiscal year 1885-'86.....		2,519,712 50
Increase over preceding year		\$133,449 50

Of other enterprises of production in this consular district may be mentioned the recent construction in this city of a 60-ton smelter and refinery, an iron foundry (said to be the only one in the Republic of Mexico), and woolen mills. Besides these, there are several other smelters, a soap and candle factory, ice factory, seven flouring mills, the machine shops of the Mexican Central Railway Company, and the principal offices of the Chihuahua and Durango Telephone Company. All these are American enterprises, conducted with American capital, and employing about five thousand Americans.

IMPORTS INTO MEXICO.

The amount and value of the importations into Mexico have been the subject of much inquiry of late years. In 1880 the Mexican Government published very full data for the fiscal years 1873 to 1875, and I made report thereof; but as they were for so remote dates they were not deemed of sufficient interest for full publication. No other Mexican statistics as to imports have since been published until those received by me on the 8th instant, from which this report is taken. In the mean time various nations have published statistics of the imports of Mexico, based upon the declared exports from their own ports and from such other data more or less reliable as they could obtain.

Mr. J. Nimmo, jr., then chief of the United States Bureau of Statistics, in a report made in 1884, states the exports from the United States to Mexico in 1883 at \$16,587,620. This is several millions too high, but was perhaps as nearly accurate as could be made from the data then at hand.

For the year ending June 30, 1885, the first half of which I treat in this report, Colonel Switzler, chief of the same Bureau, on page 71 of his annual report, gives the total exports from the United States to Mexico at \$8,420,190. For the first half of the same year, by Mexican statistics, I show imports from the United States to have been \$5,045,531, or at the rate of over \$10,000,000 for the full year. It is probable that the other half of the year was equal to or greater than the first half, so that there would be a difference of over a million and a half. The United States statistics are correct in all except domestic exports by the railways along the border. The

many refuse or neglect to do so. This is the cause of the difference of over a million and a half between the two tables. Table A shows the imports by countries and classes of articles in United States gold values, and also states under each country the plaza value in Mexican coin and the duties collected thereon in the same money. In the résumé the total imports for the half year are shown as \$11,893,347, or at the rate of \$23,786,694 for the whole year. The plaza value of these in Mexican coin was \$22,503,791 for the half year, or at the rate of \$45,007,582 for the whole year. The duties collected for the six months were \$7,042,446, or, reduced to United States gold at 80 cents, \$5,633,956, an average of a little more than 47 per cent. The United States is first in exports to Mexico; Great Britain, second; France, third; Germany, fourth, and Spain fifth. The United States sent 42 per cent.; Great Britain, 29 per cent.; France, 12 per cent.; and Germany 10 per cent.

Table B states the classes of articles by countries for the same period, giving also plaza value and duties collected. The résumé shows cotton, and manufactures of, to be \$3,076,781; the free goods, \$2,821,571; groceries and provisions, \$1,880,540; miscellaneous, \$884,769; hardware, etc., \$870,979; and wool, and manufactures of, \$688,183. It also shows the plaza value of each class of articles and the duties paid thereon reduced to United States coin at 80 cents on the dollar of Mexico.

Table C shows the imports at custom-houses by classes of articles. The résumé shows the totals for each custom-house, with also the plaza value and duties paid reduced to United States gold. The imports at Vera Cruz were \$5,790,162, or 48 per cent.

Table D shows the imports by countries and classes of articles from different countries for the fiscal year 1875 and the first half of the year 1885. This enables a comparative view of the imports at two dates ten years apart. The summary shows that the United States has doubled its commerce, Germany more than doubled, while Great Britain has lost about \$1,000,000.

Table E shows the importations by ports on the Gulf, on the Pacific, and on the frontiers for the same two dates, and gives a view of the relative changes in commercial routes in that time. A study of this table is of special interest as showing the first effects of the American railways into Mexico. The Central was finished from Paso del Norte to the capital in the early part of 1884, and the table shows the imports into Mexico before this road had greatly changed the traffic. Tampico and Vera Cruz lost while Tuxpan and Progreso gained, and the Gulf coast imports were a few hundred thousand dollars less in the latter than in the first date. On the Pacific coast Mazatlan, as stated separately in the latter date, gave an increase of \$1,250,000; San Blas, \$338,000, and various other ports so increased the total that in the latter date they would be at the rate of nearly \$5,000,000 a year as compared with a little over \$1,000,000 in 1875. On the United States frontier Matamoros, which went to Laredo and

Nogales also rose from nothing to over \$300,000. In subsequent years the traffic along this frontier has steadily increased until now it is more than one-third of the total imports. As the Sunset route is now through to the Central at Torreon near Lerdo, and the National will soon be finished through to the capital, the traffic along this frontier will be considerably increased next year. Besides there are several feeders to these main lines which will swell their traffic. Within a few years one-half the imports of Mexico are likely to be imported via these American railways. This will be one-half the carrying of what will soon be \$30,000,000 of imports, and the carrying of almost, if not fully as much, outward bound freight in exports of the country. Besides the roads now built and building there is room for one more, a trunk line from some point near Houston, Tex., along near the coast to Brownsville, Matamoros, Jimenez, Victoria, and thence via the rich coast lands of Tamaulipas and Vera Cruz to the capital. — MATAMOROS, MEXICO, *May 17, 1888.*

WARNER P. SUTTON,
Consul-General.

TABLE A.—*Imports into Mexico during the first half of the fiscal year ending June 30, 1885, (July 1 to December 31, 1884), by countries and classes of articles.*

<i>Germany.</i>	Invoice value in U. S. gold.	<i>United States.</i>	Invoice value in U. S. gold.
Free goods.....	\$79,908	Free.....	\$2,032,008
Free by executive order	741	Free by executive order.....	52,127
Cotton.....	237,726	Cotton	885,548
Linen and hemp	22,843	Linen and hemp	46,168
Woolen.....	164,065	Wool	100,849
Silk	31,932	Silk	25,013
Mixed goods.....	86,275	Mixed goods.....	71,197
Groceries and provisions.....	197,684	Groceries and provisions.....	729,059
Crystal, glass, and earthen ware.....	59,334	Crystal, glass, and earthen ware.....	60,245
Shelf and heavy hardware, etc.....	185,706	Shelf and heavy hardware, etc.....	368,512
Drugs, medicines, etc.....	33,270	Drugs, medicines, etc	129,148
Miscellaneous.....	94,926	Miscellaneous.....	487,440
Unquoted (paying 55 per cent. on whole- sale plaza value)	29,118	Unquoted.....	58,217
Total.....	1,223,528	Total.....	5,045,531
Plaza value in Mexican coin.....	\$2,538,085	Plaza value.....	\$8,817,670
Duties paid.....	947,497	Duties paid.....	2,258,480
<i>Belgium.</i>		<i>France.</i>	
Free goods.....	\$4,209	Free.....	\$88,966
Linen and hemp.....	530	Cotton	149,123
Mixed goods.....	85	Linen and hemp	17,822
Groceries and provisions.....	30,121	Wool.....	247,119
Crystal, glass, and earthen ware.....	12,988	Silk	79,844
Shelf and heavy hardware, etc.....	2,124	Mixed goods.....	98,435
Drugs, medicines, etc.....	10	Groceries and provisions.....	374,171
Miscellaneous.....	16,291	Crystal, glass, and earthen ware.....	37,565
Unquoted.....	5,447	Shelf and heavy hardware, etc.....	102,667
Total.....	71,805	Drugs, medicines etc.....	31,182
Plaza value.....	\$145,035	Miscellaneous	185,268
Duties paid.....		Unquoted.....	37,344
		Total.....	1,449,506
		Plaza value.....	
		Duties paid.....	

IMPORTS INTO MEXICO.

TABLE A. — Imports into Mexico, etc. — Continued.

	Invoice value in U.S. gold.		Invoice value in U.S. gold.
<i>Ecuador.</i>		<i>Italy.</i>	
Groceries and provisions.....	\$2,192	Free.....	\$1,110
Miscellaneous.....	1,570	Groceries and provisions.....	21,259
Total.....	3,762	Shelf and heavy hardware.....	337
		Drugs and medicines.....	616
		Miscellaneous.....	2
<i>Guatemala.</i>		Total.....	23,324
Free.....	\$2,022		
Cotton.....	2,310	Plaza value.....	\$41,716
Wool.....	2	Duties paid.....	11,396
Mixed goods.....	1		
Groceries and provisions.....	2,074	<i>China.</i>	
Crystal, glass, and earthen ware.....	138	Linen and hemp.....	\$56
Shelf and heavy hardware, etc.....	32	Silk.....	10,769
Drugs, medicines, etc.....	2	Groceries and provisions.....	13,933
Miscellaneous.....	10	Shelf and heavy hardware, etc.....	1,246
Total.....	6,591	Miscellaneous.....	16
		Unquoted.....	39
Plaza value.....	\$11,055	Total.....	26,059
Duties paid.....	2,489		
<i>Holland.</i>		Plaza value.....	\$53,223
Groceries and provisions.....	\$5,501	Duties paid.....	7,466
Shelf and heavy hardware, etc.....	1,264		
Miscellaneous.....	1,720	<i>Austria.</i>	
Total.....	8,485	Groceries and provisions.....	\$841
		Miscellaneous.....	367
Plaza value.....	\$17,129	Unquoted.....	3
Duties paid.....	6,099	Total.....	1,211
<i>Great Britain.</i>			
Free.....	\$371,331	Plaza value.....	\$2,300
Free by executive order.....	3,600	Duties paid.....	726
Cotton.....	1,799,352		
Linen and hemp.....	185,759	<i>Hindustan.</i>	
Wool.....	176,147	Groceries and provisions.....	\$382
Silk.....	21,217		
Mixed goods.....	384,496	<i>Denmark.</i>	
Groceries and provisions.....	169,525	Groceries and provisions.....	\$325
Crystal, glass, and earthen ware.....	28,798		
Shelf and heavy hardware, etc.....	196,978	<i>Ceylon.</i>	
Drugs and medicines.....	45,167	Groceries and provisions.....	\$2,460
Miscellaneous.....	52,406		
Unquoted.....	16,792	<i>Costa Rica.</i>	
Total.....	3,451,568	Groceries and provisions.....	\$10,477
Plaza value.....	\$6,954,793	<i>India.</i>	
Duties paid.....	2,467,756	Groceries and provisions.....	\$409
<i>Spain.</i>			
Free.....	\$182,419	<i>Sweden.</i>	
Cotton.....	471	Free by executive order.....	\$3,130
Linen and hemp.....	918	Shelf and heavy hardware, etc.....	2,350
Wool.....	1	Total.....	5,480
Groceries and provisions.....	309,043		
Crystal, glass, and earthen ware.....	10	<i>Norway.</i>	
Shelf and heavy hardware, etc.....	9,763	Groceries and provisions.....	\$2,980
Drugs, medicines etc.....	436		
Miscellaneous.....	44,753	<i>Switzerland.</i>	
	1,123		\$2,351

TABLE A. — Imports into Mexico, etc. — Continued.

<i>Japan.</i>	Invoice value in U. S. gold.	<i>Venezuela.</i>	Invoice value in U. S. gold.
Groceries and provisions.....	\$276	Groceries and provisions.....	\$172
Drugs and medicines.....	37		
Total.....	313	<i>Peru.</i>	
		Groceries and provisions.....	\$5,573
<i>Turkey.</i>		<i>Persia.</i>	
Groceries and provisions.....	\$1,084	Groceries and provisions.....	\$6

Résumé of Table A.

Countries.	Invoice value in U. S. gold.	Countries.	Invoice value in U. S. gold.
Germany	\$1,223,528	Hindustan.....	\$382
Austria.....	1,211	Great Britain	3,451,568
Belgium	71,805	Italy	23,324
Ceylon	2,460	Japan.....	313
Costa Rica	10,477	Norway.....	2,980
China	26,059	Peru	5,573
Denmark.....	325	Persia.....	6
Ecuador.....	3,762	Sweden.....	5,480
Spain.....	548,937	Switzerland.....	3,379
United States.....	5,045,531	Turkey.....	1,084
France	1,449,506	Venezuela.....	172
Guatemala.....	6,591		
Holland	8,485	Total.....	11,893,347
India.....	409		

TABLE B. — Imports into Mexico during the first half of fiscal year ending June 30, 1885 (July 1 to December 31, 1884), by classes of articles and countries.

<i>Free of duty.</i>	Invoice value in U. S. gold.	<i>Groceries and provisions.</i>	Invoice value in U. S. gold.
Germany	\$79,908	Germany	\$197,684
Belgium	4,209	Austria.....	841
Spain.....	182,419	Denmark.....	325
United States.....	2,032,008	India.....	409
France	88,966	Hindustan	382
Guatemala.....	2,022	Belgium	30,121
Great Britain.....	371,331	Ceylon	2,460
Italy	1,110	Costa Rica.....	10,477
Total.....	2,761,973	China	13,933
Plaza value.....	\$3,590,565	Ecuador.....	2,192
<i>Free by executive order.</i>		Spain.....	309,043
Germany	\$741	United States.....	729,059
United States.....	52,127	France	374,171
Great Britain	3,600	Guatemala.....	2,074
Sweden.....	3,130	Holland	5,501
Total.....	59,598	Great Britain	169,525
Plaza value.....	\$77,477	Italy	21,259
<i>Cotton.</i>		Japan	276
Germany	\$237,726	Persia.....	6
Spain.....	471	Switzerland.....	993
United States.....	885,548	Venezuela	172
France	149,123	Norway	2,980
Guatemala.....	2,310	Peru	5,573
Great Britain	1,799,352	Turkey.....	1,084
Switzerland.....		Total.....	1,880,540

IMPORTS INTO MEXICO.

TABLE B. — Imports into Mexico, etc. — Continued.

	Invoice value in U. S. gold.		Invoice value in U. S. gold.
<i>Silk.</i>		<i>Shelf and heavy hardware.</i>	
Germany.....	\$31,932	Germany.....	\$185,706
China.....	10,769	Belgium.....	2,124
United States.....	25,013	China.....	1,246
France.....	79,844	Spain.....	9,763
Great Britain.....	21,217	United States.....	368,512
Total.....	168,775	France.....	102,667
		Holland.....	1,264
Plaza value.....	\$360,397	Great Britain.....	196,978
Duties paid.....	140,989	Sweden.....	2,350
		Italy.....	337
<i>Mixed goods.</i>		Guatemala.....	32
Germany.....	\$86,275	Total.....	870,979
Belgium.....	85	Plaza value.....	\$1,771,391
United States.....	71,197	Duties paid.....	639,119
Guatemala.....	1		
France.....	98,435	<i>Drugs, medicines, etc.</i>	
Great Britain.....	384,496	Germany.....	\$33,270
Switzerland.....	135	United States.....	129,148
Total.....	640,624	France.....	31,182
Plaza value.....	\$1,367,892	Great Britain.....	45,167
Duties paid.....	535,081	Belgium.....	10
		Spain.....	436
<i>Linen and hemp.</i>		Guatemala.....	2
Germany.....	\$22,843	Italy.....	616
Belgium.....	530	Japan.....	37
China.....	56	Total.....	239,868
Spain.....	918	Plaza value.....	\$486,182
United States.....	46,168	Duties paid.....	174,355
France.....	17,822		
Great Britain.....	185,759	<i>Miscellaneous.</i>	
Total.....	274,096	Germany.....	\$94,926
Plaza value.....	\$591,224	Belgium.....	16,291
Duties paid.....	234,899	Ecuador.....	1,570
		Spain.....	44,753
<i>Wool.</i>		United States.....	487,440
Germany.....	\$164,065	France.....	185,268
Spain.....	1	Holland.....	1,720
United States.....	100,849	Great Britain.....	52,406
France.....	247,119	Austria.....	367
Guatemala.....	2	China.....	16
Great Britain.....	176,147	Guatemala.....	10
Total.....	688,183	Italy.....	2
Plaza value.....	\$1,427,883	Total.....	884,769
Duties paid.....	533,246	Plaza value.....	\$1,751,916
		Duties paid.....	601,717
<i>Crystal, glass, and earthen ware.</i>			
Germany.....	\$59,334	<i>Unquoted.</i>	
Belgium.....	12,988	Paying 55 per cent. on wholesale plaza	
Spain.....	10	value.....	\$29,118
Guatemala.....	138	Germany.....	5,447
United States.....	60,245	Belgium.....	1,123
France.....	37,565	Spain.....	58,217
Great Britain.....	28,798	United States.....	37,344
		France.....	16,792
		Great Britain.....	3
		Austria.....	39
		China.....	148,083

TABLE B.—*Imports into Mexico, etc.*—Continued.*Résumé of Table B.*

Classes of articles.	Invoice value in U. S. gold.	Plaza value re- duced to U. S. gold at 80 cents on the dollar of Mexico.	Duties paid re- duced to U. S. gold at 80 cents on the dollar of Mexico.
Free of duties	\$2,761,973	\$2,872,452	.....
Free by executive order.....	59,598	61,981	.....
Cotton	3,076,781	5,293,619	\$2,093,768
Linen and hemp.....	274,096	472,979	187,919
Wool.....	688,183	1,142,306	426,597
Silk.....	168,775	288,317	112,791
Mixed goods.....	640,624	1,094,314	428,065
Groceries, etc.....	1,880,540	3,008,636	1,052,874
Crystal, etc.....	199,078	329,110	122,069
Hardware, etc	870,979	1,417,113	511,295
Drugs, etc.....	239,868	388,946	139,484
Miscellaneous.....	884,769	1,401,533	481,373
Unquoted.....	148,083	231,727	77,721
Total.....	11,893,347	18,003,033	5,633,956

TABLE C.—*Imports into Mexico by custom-houses and classes of articles first half fiscal year ending June 30, 1885 (July 1 to December 31, 1884).*

<i>Acapulco.</i>	Invoice value in U. S. gold.	<i>Cape San Lucas.</i>	Invoice value in U. S. gold.
Free of duties.....	\$18,161	Free	\$1,555
Cotton	54,987	Groceries, etc.....	1,843
Linen and hemp	1,744	Other	1,618
Wool.....	1,222	Total....	5,016
Mixed goods.....	1,868		
Groceries and provisions.....	7,243		
Shelf and heavy hardware, etc.....	5,231		
Drugs, medicines, etc.....	2,500		
Miscellaneous.....	1,509		
Unquoted	1,030		
Other	933		
Total.....	96,328		
<i>Altata.</i>		<i>Camargo.</i>	
Free.....	\$5,076	Free	\$5,300
Groceries, etc.....	8,990	Cotton	1,596
Hardware, etc.....	3,442	Groceries, etc.....	6,006
Drugs, etc.....	2,122	Hardware, etc.....	1,256
Other	2,401	Miscellaneous.....	4,270
Total.....	22,031	Other	1,339
		Total.....	19,767
<i>Ascension.</i>		<i>Campeche.</i>	
Free goods.....	\$2,676	Free	\$54,432
Groceries.....	1,853	Cotton	4,797
Other	1,048	Groceries, etc.....	28,641
Total	5,571	Crystal, etc.....	2,556
		Hardware, etc.....	1,066
		Drugs, etc.....	1,562
		Miscellaneous.....	5,484
		Other.....	1,313
		Total.....	99,851

IMPORTS INTO MEXICO.

TABLE C. — Imports into Mexico, etc. — Continued.

	Invoice value in U.S. gold.		Invoice value in U.S. gold.
<i>Frontera.</i>		<i>La Paz.</i>	
Free.....	\$46,239	Free.....	\$11,163
Cotton.....	81,886	Cotton.....	19,130
Linen and hemp.....	11,597	Groceries, etc.....	7,725
Wool.....	2,589	Hardware, etc.....	2,858
Mixed goods.....	5,965	Miscellaneous.....	1,607
Groceries, etc.....	42,018	Other.....	2,623
Hardware, etc.....	15,084	Total.....	45,106
Drugs, etc.....	5,620		
Miscellaneous.....	8,557	<i>Matamoros.</i>	
Unquoted.....	1,006	Free.....	\$35,334
Other.....	1,958	Cotton.....	187,673
Total.....	222,519	Linen and hemp.....	14,799
		Wool.....	48,505
<i>Guaymas.</i>		Silk.....	13,570
Free.....	\$30,809	Mixed goods.....	28,288
Cotton.....	40,222	Groceries, etc.....	209,758
Linen and hemp.....	2,557	Crystal, etc.....	4,265
Wool.....	3,526	Hardware, etc.....	39,642
Mixed goods.....	6,104	Drugs, etc.....	10,471
Groceries, etc.....	43,442	Miscellaneous.....	78,188
Crystal, etc.....	2,869	Unquoted.....	3,275
Hardware, etc.....	7,631	Total.....	673,772
Drugs, etc.....	2,492		
Miscellaneous.....	8,894	<i>Mazatlan.</i>	
Unquoted.....	2,749	Free.....	\$237,341
Other.....	679	Cotton.....	328,049
Total.....	151,974	Linen and hemp.....	48,234
		Wool.....	64,430
<i>Guerrero.</i>		Silk.....	16,450
Free.....	\$14,824	Mixed goods.....	43,427
Cotton.....	5,413	Groceries, etc.....	281,147
Groceries, etc.....	9,866	Crystal, etc.....	22,911
Miscellaneous.....	3,486	Hardware, etc.....	106,042
Other.....	3,411	Drugs, etc.....	27,404
Total.....	37,000	Miscellaneous.....	61,077
		Other.....	54,730
<i>Isla del Carmen.</i>		Total.....	1,291,242
Free.....	\$16,196		
Cotton.....	2,811	<i>Mier.</i>	
Other.....	1,380	Free.....	\$12,139
Total.....	20,387	Cotton.....	2,037
		Groceries, etc.....	4,100
<i>Manzanillo.</i>		Other.....	1,490
Free.....	\$11,273	Total.....	19,766
Cotton.....	93,327		
Linen and hemp.....	7,376	<i>Nuevo Laredo.</i>	
Wool.....	2,827	Free.....	\$293,661
Silk.....	2,339	Cotton.....	90,905
Mixed goods.....	7,657	Linen and hemp.....	9,603
Groceries, etc.....	30,630	Wool.....	26,684
Crystal, etc.....	14,975	Silk.....	5,585
Hardware, etc.....	20,963	Mixed goods.....	24,354
		Groceries, etc.....	79,100
		Crystal, etc.....	16,654
		Hardware, etc.....	40,753
			9,746

TABLE C. — Imports into Mexico, etc. — Continued.

<i>Nogales.</i>	Invoice value in U. S. gold.	<i>Progreso.</i>	Invoice value in U. S. gold.
Free	\$40,859	Free.....	\$471,632
Cotton.....	60,574	Free by executive order	8,118
Wool.....	2,595	Cotton	53,297
Mixed goods.....	2,790	Linen and hemp.....	1,914
Groceries, etc.....	30,460	Wool.....	1,854
Hardware, etc.....	13,369	Mixed goods.....	5,262
Drugs, etc.....	1,790	Groceries, etc.....	66,960
Miscellaneous.....	7,053	Crystal, etc.....	3,497
Other	2,702	Hardware, etc.....	17,009
Total.....	162,192	Drugs, etc.....	9,902
		Miscellaneous.....	17,856
		Unquoted	7,217
		Total.....	664,518
<i>Palenimas.</i>			
Free.....	\$7,975	<i>Puerto Angel.</i>	
Cotton	1,288	Groceries, etc.....	\$6,709
Groceries, etc.....	5,345	Other	1,335
Hardware, etc.....	2,219	Total.....	8,094
Miscellaneous.....	2,438		
Other	965	<i>Quitovaquito.</i>	
Total.....	20,230	All.....	\$378
<i>Paso del Norte.</i>		<i>Salina Cruz.</i>	
Free.....	\$393,291	Free	\$2,352
Free by executive order.....	49,699	Cotton	10,809
Cotton.....	66,510	Groceries, etc.....	8,898
Linen and hemp	1,982	Hardware, etc.....	2,205
Wool.....	3,126	Other	3,259
Silk.....	897	Total.....	27,523
Mixed goods.....	2,345		
Groceries, etc.....	80,107	<i>San Blas.</i>	
Crystal, etc	13,374	Free	\$68,020
Hardware, etc.....	52,697	Cotton	116,430
Drugs, etc.....	18,079	Linen and hemp.....	10,477
Miscellaneous.....	37,622	Wool.....	11,004
Unquoted.....	14,691	Mixed goods.....	13,125
Total.....	734,420	Groceries, etc.....	60,183
		Hardware, etc.....	29,970
		Drugs, etc.....	9,797
<i>Piedras Negras.</i>		Miscellaneous.....	12,982
Free.....	\$108,340	Other	6,174
Cotton	24,270	Total.....	338,162
Linen and hemp	3,176		
Wool.....	10,680	<i>Sasabe.</i>	
Mixed goods.....	3,484	Free.....	\$3,853
Groceries, etc.....	28,951	Cotton	3,234
Crystal, etc.....	2,827	Groceries, etc.....	5,050
Hardware, etc.....	12,591	Other.....	6,050
Drugs, etc.....	3,301	Total	18,187
Miscellaneous.....	24,811		
Unquoted.....	5,847	<i>Soconusco.</i>	
Total.....	228,278	Free	\$2,866
		Cotton	2,502
<i>Presidio del Norte.</i>		Groceries, etc.....	4,921
Hardware, etc.....	1,203	Hardware, etc.....	1,680
Other	2,643	Other.....	
Total.....			

IMPORTS INTO MEXICO.

TABLE C. — Imports into Mexico, etc. — Continued.

	Invoice value in U.S. gold.		Invoice value in U.S. gold.
<i>Tampico.</i>		<i>Todos Santos.</i>	
Free.....	\$29,825	Groceries, etc.....	\$1,847
Free by executive order.....	1,780	Other.....	1,620
Cotton.....	44,182	Total.....	3,467
Linen and hemp.....	3,404		
Wool.....	6,397	<i>Tuxpan.</i>	
Silk.....	1,084	Free.....	\$7,511
Mixed goods.....	3,116	Cotton.....	1,200
Groceries, etc.....	46,353	Groceries, etc.....	18,780
Crystal, etc.....	5,832	Crystal, etc.....	5,993
Hardware, etc.....	20,228	Hardware, etc.....	5,438
Drugs, etc.....	3,399	Miscellaneous.....	1,721
Miscellaneous.....	10,528	Other.....	1,068
Unquoted.....	1,462	Total.....	41,711
Total.....	177,590		
<i>Tijuana</i>		<i>Vera Cruz.</i>	
Free.....	1,567	Free.....	\$812,134
Groceries, etc.....	1,438	Cotton.....	1,766,654
Other.....	697	Linen and hemp.....	152,333
Total.....	3,702	Wool.....	499,018
<i>Tonolá.</i>		Silk.....	123,927
Free.....	\$13,284	Mixed goods.....	490,305
Cotton.....	8,568	Groceries, etc.....	725,257
Wool.....	1,110	Crystal, etc.....	92,292
Groceries, etc.....	24,861	Hardware, etc.....	449,308
Crystal, etc.....	5,623	Drugs, etc.....	115,560
Hardware, etc.....	14,911	Miscellaneous.....	521,925
Drugs, etc.....	2,479	Unquoted.....	41,449
Miscellaneous.....	4,348	Total.....	5,790,162
Other.....	780		
Total.....	75,964	<i>Zapaluta.</i>	
		Groceries, etc.....	\$2,268
		Other.....	286
		Total.....	2,554

Résumé of Table C.

Custom-houses.	Invoice value in U. S. gold.	Plaza value re- duced to U. S. gold at 80 cents on the dollar of Mexico.	Duties paid re- duced to U. S. gold at 80 cents on the dollar of Mexico.
Acapulco.....	\$96,328	\$137,386	\$37,205
Altata.....	22,031	31,051	8,139
Ascension.....	5,571	7,322	1,529
Bahia de la Magdalena.....	3,831	6,105	2,121
Cape San Lucas.....	5,016	7,054	1,838
Camargo.....	19,767	30,454	9,896
Campeche.....	99,851	131,477	27,631
Coatzacoalcos.....	75	112	34
Frontera.....	222,519	347,827	116,407
Guaymas.....	151,974	261,846	103,794
Guerrero.....	37,000	54,849	16,370
Isla del Carmen.....	20,387	26,185	4,983
La Paz.....	45,106	63,911	17,001
Manzanillo.....	208,504	311,316	94,472
Matamoros.....	673,772	995,190	294,468
Mazatlan.....	1,291,242	2,173,490	830,598
	10,766	28,084	7,527
			50,723

Résumé of Table C.—Continued.

Custom-houses.	Invoice value in U. S. gold.	Plaza value re- duced to U. S. gold at 80 cents on the dollar of Mexico.	Duties paid re- duced to U. S. gold at 80 cents on the dollar of Mexico.
Piedras Negras	\$228,278	\$324,321	\$86,912
Presidio del Norte.....	3,846	5,405	1,405
Progreso.....	664,518	788,611	97,513
Puerto Angel.....	8,094	11,605	3,187
Quitovaquito.....	378	531	137
Salina Cruz.....	27,523	46,937	18,313
San Blas.....	338,162	481,659	129,970
Sásabe.....	18,187	26,356	7,441
Soconusco	13,253	26,107	12,325
Tampico.....	177,590	297,309	112,616
Tijuana.....	3,702	4,702	852
Todos Santos.....	3,467	5,120	1,515
Tonalá.....	75,964	106,403	27,401
Tuxpan.....	41,711	64,748	21,369
Vera Cruz.....	5,790,162	9,070,068	3,048,299
Zapaluto.....	2,554	3,775	1,119
Total	11,893,347	18,003,033	5,633,957

TABLE D.—Imports into Mexico by countries and classes of articles.

Classes of articles.	Year ending June 30, 1875.	First half of year ending June 30, 1885.
<i>Germany.</i>		
Free.....	\$50,144	\$79,908
Free by executive order.....		741
Cotton.....	199,750	237,726
Linen and hemp	27,599	22,843
Wool.....	40,379	164,065
Silk	3,240	31,932
Mixed goods.....	44,903	86,275
Groceries, etc.....	288,346	197,684
Crystal, etc.....	74,181	59,334
Hardware, etc.....	147,593	185,706
Drugs, etc.....	12,107	33,270
Miscellaneous.....	116,232	94,926
Unquoted	1,289	29,118
Total.....	1,005,763	1,223,528
<i>Spain.</i>		
Free.....	\$12,295	\$182,419
Cotton.....	2,374	471
Linen and hemp	2,430	918
Wool.....	9	1
Mixed goods.....	728	
Groceries, etc.....	710,525	309,042
Crystal, etc.....	316	10
Hardware, etc.....	3,832	9,762
Drugs, etc.....	1,512	436
Miscellaneous.....	179,500	44,753
Unquoted		

TABLE D. — Imports into Mexico by countries and classes of articles. — Continued.

Classes of articles.	Year ending June 30, 1875.	First half of year ending June 30, 1885.
<i>France.</i>		
Free.....	\$320,611	\$88,966
Cotton	344,732	149,123
Linen and hemp	99,494	17,822
Wool.....	441,265	247,119
Silk	160,579	79,844
Mixed goods.....	215,953	98,435
Groceries, etc.....	733,893	374,171
Crystal, etc.....	61,970	37,565
Hardware, etc.....	298,314	102,667
Drugs, etc.....	36,370	31,182
Miscellaneous.....	364,866	185,268
Unquoted.....	18,943	37,344
Total.....	3,096,990	1 449,506
<i>Great Britain.</i>		
Free.....	\$1,331,369	\$371,331
Free by executive order		3,600
Cotton	5,109,231	1,799,352
Linen and hemp	453,456	185,759
Wool.....	342,248	176,147
Silk.....	79,509	21,217
Mixed goods.....	456,040	384,496
Groceries, etc.....	347,068	169,525
Crystal, etc.....	46,486	28,798
Hardware, etc.....	310,346	196,978
Drugs, etc.....	20,916	45,167
Miscellaneous.....	150,061	52,406
Unquoted	10,433	16,792
Total.....	8,657,163	3,451,568
<i>United States.</i>		
Free.....	\$1,023,063	\$2,032,008
Free by executive order		52,127
Cotton	1,674,184	885,548
Linen and hemp	117,229	46,168
Wool.....	163,743	100,849
Silk.....	31,158	25,013
Mixed goods.....	78,547	71,197
Groceries, etc.....	852,278	729,059
Crystal, etc.....	56,659	60,245
Hardware	394,895	368,512
Drugs, etc.....	102,915	129,148
Miscellaneous.....	507,285	487,440
Unquoted.....	26,379	58,217
Total.....	5,028,635	5,045,531
All other	\$90,034	\$174,277

Résumé of Table D.

Country.	Year ending June 30, 1875.	Half year ending June 30, 1885.
Germany.....	\$1,005,763	\$1,223,528
	914,908	548,937
	2,006,090	1,449,506

TABLE E.—Imports into Mexico by custom-houses—values in United States gold.

Classes of articles.	Year ending June 30, 1875.	First half of year ending June 30, 1885.
<i>Gulf of Mexico.</i>		
Tampico.....	\$912,337	\$177,590
Túxpan.....	54,706	41,711
Vera Cruz.....	12,344,834	5,790,162
Frontera.....	142,784	222,519
Isla del Carmen.....	51,130	.....
Campeche.....	169,456	99,851
Progreso.....	657,679	664,518
Other.....	5,103	5,646
Total.....	14,338,029	7,001,997
<i>Pacific Ocean.</i>		
Altata.....	.....	\$22,031
Magdalena.....	\$23,509	3,831
La Paz.....	152,680	45,106
Guaymas.....	282,909	151,974
Tonalá.....	.....	75,964
Manzanillo.....	356,426	208,504
Mazatlan.....	.....	1,291,242
Acapulco.....	291,792	96,328
Sásabe.....	.....	18,187
Salina Cruz.....	5,153	27,523
San Blas.....	.....	338,162
Soconusco.....	31,463	13,253
Isla del Carmen.....	.....	20,387
Palominas.....	.....	20,230
Other.....	.....	20,657
Total.....	1,143,932	2,353,379
<i>Guatemala frontier.</i>		
Zapaluta.....	\$14,677	\$2,554
<i>United States frontier.</i>		
Matamoros.....	\$2,347,089	\$673,772
Camargo.....	78,341	19,767
Mier.....	158,279	19,766
Guerrero.....	.....	37,000
Laredo.....	370,192	656,376
Piedras Negras.....	70,601	228,278
Presidio del Norte.....	225,156	3,846
Paso del Norte.....	47,197	734,420
Nogales.....	.....	162,192
Total.....	3,296,855	2,535,417
Gulf of Mexico.....	\$14,338,029	\$7,001,997
Pacific Ocean.....	1,143,932	2,353,379
Guatemala frontier.....	14,677	2,554
United States frontier.....	3,296,855	2,535,417
Total.....	18,793,493	11,893,347

SUNDAY LABOR IN GERMANY.

An inquiry into the extent to which Sunday labor is practiced in Germany was recently set on foot by the Imperial Government prior to entering on the consideration of the propriety of regulating Sunday labor by imperial legislation. The laws of the various states of the German Empire are by no means uniform on this subject. In Saxony, for example, Sunday labor is prohibited in the manufacturing and farming industries, and in trade, with the exception of work necessary to prevent accidents or injury to health, repairs which can not be delayed, and works of "urgency." In Prussia the legislation is not so strict. For some time past a demand has been raised in various quarters for the limitation, or, at any rate, for the uniform regulation of Sunday work throughout the Empire, for it is obvious that a manufacturer or trader in a state which permits Sunday labor possesses a considerable advantage over his rival in a state where Sunday is a legal day of rest.

The results of the investigations leave a good deal to be desired in respect of fullness. In some cases divergent views as to the precise meaning of "Sunday" and "Sunday work;" in others indifference or ignorance have rendered the answers unavailable for statistical purposes. The most complete and accurate replies were received from the administrative districts (*Regierungs bezirke*) of the Prussian Kingdom; and as Prussia is by far the most important and extensive of the states of the Empire, the results of the investigation have a considerable value in showing the conditions which govern business in such a large area. In the 30 Prussian administrative districts from which the answers were most detailed, the inquiries extended to 500,156 establishments (*Betriebe*) of all kinds with 1,582,591 hands. Of these 288,939 establishments, or 57.75 per cent., and 668,027 (42.25 per cent.) hands work on Sunday; 211,217 establishments, or 42.25 per cent., and 919,564 hands, or 57.75 per cent., have no Sunday work. A closer examination shows that Sunday labor is much greater in trade and transport than in industrial (*gross industrie*) and manual labor, inasmuch as in the latter groups 47.2 per cent. of the establishments, and 35.9 per cent. of the work people have Sunday labor, while 52.8 per cent. of the establishments and 64.1 per cent. of the work people have none.

In sixteen of the districts it was possible to distinguish further between the proportions for large industrial undertakings (*gross industrie*) and for manual labor (*handwerk*). In large industrial undertakings Sunday work was carried on in 49.4 per cent. of the establishments and by 29.8 per cent. of the work people; in handicraft, in 47.1 per cent. of the establishments and by 41.8 per cent. of the work people. The explanation of these figures

is to be that while a larger proportion of the large industrial establish-
ments have some part of

small proportion of hands, whereas in handicrafts, although a smaller proportion of establishments work on Sunday, the want of division of labor necessitates the presence of all, or nearly all, the work people, and this is particularly true of the smaller undertakings. The explanation is confirmed by the results of the investigations in eight districts where it was possible to ascertain what proportion of the workmen who do not work on Sunday are employed in establishments which have Sunday work. In the great industries it appears that establishments which work on Sunday only employ 47.1 per cent. of their hands on that day; handicrafts, on the other hand, employ 95.4 per cent.

For trade and transport, figures were obtained from twenty-nine districts, with the result that 77.6 per cent. of the establishments and 57.8 per cent. of the work people are employed on Sunday. A comparison with similar figures for industry and handicrafts gives the following general results: As compared with handicrafts, the great industries work a larger proportion of establishments but a smaller proportion of work people on Sunday; as compared with trade and transport, comparatively fewer of both establishments and work people. Trade and transport also employ a proportionately larger number of establishments and work people on Sunday than handicrafts.

With respect to these conclusions it should be observed that they only refer to the usual Sunday work which occurs more or less regularly. In the broader sense, of any kind of work that is ever done on Sunday it is probable that there are scarcely any houses where some work is not done from time to time. In trade the keeping open of the shop or sale department may be taken as the definition of regular Sunday work. In factories and great industries regular Sunday work applies chiefly to repairs and keeping the machinery and so on always going. Periodically recurring Sunday work is most frequent in such branches as land industry, where work must be done at certain periods of the year, and in branches where there is periodical recurrence of a pressure of business. The great industries, together with handicrafts, home industries, and, to some extent, trade are subject to this kind of Sunday work. Irregularly recurring Sunday work is infrequent in the great industries and in trade; but it is very common in handicrafts. Regular Sunday in the large industries employ a portion of the staff. In small establishments in places where Sunday work is the rule, and in branches like photography, where the best trade is done on Sunday, the work employs the whole staff. Periodically recurring Sunday work as a rule requires the services of the entire staff. As regards the practicability of a prohibition of Sunday labor the general result was that 23 per cent. of masters and 32 per cent. of the men believe in an unlimited prohibition; 39 per cent. of masters and 41 per cent. of men in a limited prohibition, while 38 per cent. of the master and 27 per cent. of the men hold any kind of prohibition to be impracticable. Distributed among the different classes of occupations these numbers become in great industries and factories, for unlimited prohibition

per cent. men; for limited prohibition, 54 per cent. masters, 57 per cent. men; for no prohibition, 33 per cent. masters, 25 per cent. men. In handicrafts, for unlimited prohibition, 18 per cent. masters, 21 per cent. men; for limited prohibition, 41 per cent. masters, 52 per cent. men; for no prohibition, 41 per cent. masters, 27 per cent. men. In trade, for unlimited prohibition, 41 per cent. masters, 59.5 per cent. men; for limited prohibition, 27 per cent. masters, 18.5 per cent. men; for no prohibition, 32 per cent. masters, 22 per cent. men. In transport, for unlimited prohibition, 12 per cent. masters, 16 per cent. men; for limited prohibition, 11.5 per cent. masters, 14 per cent. men; for no prohibition, 76 per cent. masters, 70 per cent. men. — LEIPSIK.

SAMUEL ROLFE MILLAR,
Consul.

RAMIE FIBER.

The European market for ramie is London. The ramie prepared by the Chinese is the only salable article, as their mode of stripping leaves the ribbon entire, and retains the luster and strength which constitute its value. This fact is a strong argument in favor of stripping the stalks while green.

The plantation of ramie from which the Berthet machine expected to obtain its experimental supply was not sufficiently advanced last year to test the merits of the machine. Mr. Berthet told me that he could simplify his machine, and thus diminish cost, weight, and motive power. He also suggested that the fiber, when stripped, can be cleansed from its gum and bleached by an inexpensive chemical process, such as he now uses in his works, at a cost of about 60 cents per 100 pounds. By this process the weight is reduced about 30 per cent., and the market value enhanced as the article is advanced to another stage in its manufacture. The price of Chinese ramie is \$12 per 100 pounds. The inclosed specimen of American ramie was probably as good as the Chinese, but from its treatment has no more value than waste, which is about \$3 per 100 pounds. I inclose also specimens of ramie sold in London, and in the bleached state, as alluded to above.

I noticed that a machine of American invention had been recently patented for stripping osiers, and it occurred to me that the same might be utilized for ramie, the stalk of which differs but little in size.

The French Government has organized a competitive exhibition of machines for decorticating ramie, to take place in August next at Paris, and 30,000 francs have been appropriated to defray expenses. — ROUEN, FRANCE,

May 16, 1888.

CHAS. P. WILLIAMS,
Consul

CHINESE IMMIGRATION IN STRAITS SETTLEMENTS.

There were 167,906 Chinese immigrants examined on board vessels and in the landing depots on their arrival at Singapore, as against 146,862 in 1886. In Singapore there has been an increase of 13,763, and in Penang of 8,162. Of the whole number, 101,094 landed in Singapore, and 65,348 went on to Penang, the numbers in the previous years being 87,331 and 57,186, respectively. Of the Singapore immigrants, 765 proceeded to Malacca and 3,096 to other places. In Singapore 19,496 and in Penang 22,904 were admitted into the licensed depots. The number of immigrants whose passages were unpaid was greater by 3,208 than the number in 1886.

The number of women who arrived in the colony was 6,271, as against 4,714 in the preceding year. Of these, 3,037 landed in Singapore, 2,667 went on to Penang, and 567 to other places.

There were 51,859 contracts to labor executed in the colony, as against 45,717 in 1886. Of these, 24,567 were for labor in the colony and the protected native states, and 27,292 for labor in other places.

RAILROADS IN JAPAN.

The island of Kiusiu, of which Nagasaki is the only port open to foreigners, is the most southern of the four islands into which the main Empire of Japan is geographically divided. It has an area of 15,069 square miles, and a population of 5,026,285, or 333.65 people to the square mile. Being less opened than any of the other great divisions its interior is less known to foreigners; the interest of foreign merchants and others in Japan being based almost entirely on consideration of Hondo, the main island. The benefit to be derived commercially, therefore, from a railroad that would traverse the island from a port on Shimonoseki Strait in the north, to the cities of Kumamoto in the south and Nagasaki in the southwest, with branches to Sasebo, Misumo, Yatsushiro, passing through the provinces of Chikuzen, Chikugo, and Higo, tapping their rich coal-fields and furnishing easy and economic transportation for the superabundant crops of rice, wheat, barley, and other products, can hardly be overestimated. From a military point of view also a railway would be of some strategical importance, as it would give increased facilities of transport to the naval rendezvous and depot at Sasebo, which is being constructed by the Government at the entrance to the Gulf of Omura. Recognizing the importance of a railway, therefore, in trade and other considerations, the people of Tokuoka ken originated the project of the Kiusiu railroad in 1886, and invited subscriptions to the stock. They were joined by Saga ken and Kumamoto. Later Nagasaki ken joined heartily in the scheme.

answer, granted permission to form a company, and appointed a president to serve ten years, and three representatives of each ken, making twelve in all. The duty of these representatives was to shape the company, clearly outline the road, furnish maps, plans, estimates, etc., the Government loaning the services of a German inspector of railways in its employ to superintend the surveys. These, with a petition, have been lately submitted by the president, and the Government has assented and will sanction the building of the road. In the near future there will be a general meeting of the stockholders at which directors will be elected and the building of the road, in all probability, will be begun.

The accompanying sketch-map of the part of Kiusiu traversed by the proposed road has been prepared to show the principal stations and the general route.

Moji, an excellent harbor, opposite Shimonoseki, on the Kiusiu side of the strait; of no importance save as a terminal point to connect with a proposed road from Shimonoseki to Hiogo, in Hondo. From Kokura, population 8,500, a branch road will lead to Giojo, a harbor town on the northeast coast of Kiusiu. Fukuoka, one of the largest cities on the island; poor harbor, opening to the north; cold in winter; no breakwater; landing facilities bad; built on low sandy plain, separated by a small stream from Hakata, which is noted for native silk fabrics, although recently silk suitable for foreign wear, etc., has been successfully made, have populations aggregating 50,000. The road from Fukuoka to Kurume traverses a fertile and well-populated valley filled with villages; very gradual in ascent; spanning the Chikugo gawa by a bridge necessarily of some magnitude. Tajiro, the junction of the Nagasaki and Kumamoto branches, a small town, but located in a very fertile country, growing two crops yearly of wheat, buckwheat, turnips, radishes, and beans, which are harvested in the spring in time for the ground to be prepared to receive rice, which is harvested in the fall. In this district there are immense numbers of the haji tree, from which vegetable wax is obtained; also an oil greatly used by the Japanese. Camphor trees, the trunks of some of which are over 10 feet in diameter at the base, abound. Kurume, population 21,000, lying close to the river Chikugo, is a busy and thrifty city, noted for the productions of its looms. The water of Kurume is celebrated for its purity, similar to that of Kyoto, and on this account noted for good and fast dyes in cotton and silk materials; a very important station. Yamagawa, population 8,500, is the chief town of Yamagawa ken, which produces cotton largely; also vegetable wax, and the fine reeds from which upper mat surfaces are made. The country is flat and cut up by many tide-canals reaching far inland. It is densely populated, and on the road one sees groups of large villages.

Miiki—this station gives a name to the coal which is mined in this region. The mines which belong to the Imperial Government are located a little distance from the town. There are some 2,500 convicts employed, the Government working the mines. The output is about 1,000 tons per day. The latest surveys show that the coal as mined at present will not be exhausted for three hundred years. Miiki coal is sent to Kuchinotsu in boats across Shimabara Gulf and thence shipped in large steamers to the several ports of China and Japan, but on completion of the railway it is proposed to transport the coal in cars to Misumo and make it the shipping port. Takase and Todoroki are bright, well-built towns, situated in a well cultivated country swarming with people. Kumamoto, population 4,500, is considered the chief city of Kiusiu, but its prominence is largely dependent upon it being a garrison town with a strong castle of the Japanese type. It is not noted for any particular manufactures. It is, however, the mart for the exchange of considerable quantities of staple commodities such as rice, camphor, mushrooms, etc., produced in central and southern Kiusiu. The farms throughout this region are large and productive, and coal is found in several directions from the city. Kumamoto, 3 miles inland, the nearest harbor, is so shallow that the smallest vessels are compelled to drop their anchors 4 miles off shore. The officials and chief citizens of the place being alive to the requirements of their city and wishing to draw to the place connections with the rapidly developing mining interests about it, thus taking precautions against having trade in southern Kiusiu turned from them to Saga, Nagasaki or Fuguoka, conceived the idea of building a port for the city. Misumi, a small closely shut-in but deep harbor, 23 miles to the southwest of the city, was selected for the purpose. The Imperial Government gave one-third of the money needed, and during the past three years the Kumamoto government has spent 300,000 yen in opening this port and building a highway to it. On this road it was originally intended to lay a railroad, and this was really the origin of the Kiusiu Railroad Company. The road was finished in the summer of 1887 at a cost of 200,000 yen. It is well appearing, level, well-ballasted, and has good bridges, the greater part of it being a shelf cut of the hill-sides along the sea-coast. The town of Misumi is a little flat about 25,000 feet long and 600 feet wide, made by cutting down rocky hill faces and filling in the sea-shore. The streets are well paved with granite blocks, with heavy granite gutters, covered drains, and three or four deep tide drains or ways of granite, running through the town. The sea face is also magnificently constructed of granite. Some European model port was doubtless closely followed in laying out the place; Japanese labor is cheap and stone is abundant all about Misumi, yet 100,000 yen has been spent on this harbor. The attempt to make the new sea-port of Kumamoto the model harbor of Japan has been successfully accomplished. The harbor is a part of the very winding strait separating Amakusa from the mainland.

affording a safe anchorage for the largest ships. On the completion of the railroad Misumi will be the shipping port also of the Miiki coal mines instead of Kuchinotsu. The road from Tajiro to Nagasaki passes through a fine country densely populated and very productive. Saga, a very thrifty and flourishing city; Arita, a large place and of importance, producing vast quantities of porcelain; and Sasebo, one of the five military harbors now being established, are the principal stations. Nagasaki, an open treaty port, population 50,000; excellent harbor; imports, 1885, \$1,154,207; exports, \$3,495,202. Imports, textile fabrics, petroleum, sugar, American canned goods, sewing-machines, California wines, small and light hardware. Exports, coal, tea, camphor, tobacco, wheat, vegetable wax, porcelain. Important naval station. Large dock and engine works are located at this port. The building of this road ought to stir up a brisk trade of imported goods and should very greatly alter the trade of Nagasaki for the better and raise the general reputation of this part of Kiusiu. The surveyed route from Fukuoka to Kumamoto and Misumi is well adapted for railroad construction, there being only one or two really difficult places on it. It is made up largely of long perfectly straight stretches of macadamized road recently built by the different local governments. The route from Tajiro to Nagasaki will offer more difficulties. The stretches between Ureshino and Sonogi, Isahaya, and Nagasaki, in all about 10 miles, being especially bad, requiring high bridging, deep cuttings, and tunnels. The whole line may be divided for convenience into three sections—Maji to Kurume, 69 miles; Kurume to Yatsushiro and Misumi, 108 miles; Tajiro to Nagasaki and Sasebo, 93 miles. Total length of proposed railway, 270 miles. It has been estimated that the cost of road will approach 10,134,813 yen; average cost per mile, 37,400 yen. If we take into consideration the cost of construction of the existing Japanese railways the estimated cost per mile should be at least 60,000 yen. The published cost of the roads already constructed is as follows:

	Yen per mile.
Tokio to Yokohama.....	178,743
Kobe to Osaka.....	220,815
Kioto to Osaka.....	103,448
Kioto to Otsu.....	66,424

The total annual income, after the completion of the line, based on returns of produce yielded in the Fukuoka ken in 1882 and on the returns of the traveling population of the districts through which the line is to pass, is estimated at about \$1,400,000.

This Kiusiu road is the second principal railroad in Japan proposed to be built privately. The Sanyodo Railroad (Kobe to Shimonoseki) is private, construction of the road entirely to the

of nationality), urge that the 60-pound rail of the Government is too heavy and uselessly expensive, and claim with the Americans that the 30 to 40 pound steel rail is right for the 3-feet 6-inch gauge, they also favor the American locomotive, which is peculiarly adapted to the Arita-Sonogi stretch of the Nagasaki branch. Should the light rail be adopted American rolling stock may be in demand. In all probability, however, the Imperial Government will fix the gauge at 3 feet 6 inches and the weight of rail at 60 pounds, which weight of rail is unreasonable to Americans when they remember that 70 pounds is the weight of the rail of the Pennsylvania Railroad with its heavy locomotives, while here the gauge on the existing roads is but 3 feet 6 inches and the heaviest locomotives not over 35 tons weight. It is hoped that in the future the Americans will get a fair share of Government contracts and do a larger business with private companies in the way of supplying railroad material, steamships, etc.

I beg to inclose clippings from the Japan Mail, published at Yokohama, commenting on the Kiusiu Railroad and Miiki coal mines.—NAGASAKI, JAPAN, May 9, 1888.

JOHN M. BIRCH,
Consul.

[NEWSPAPER EXTRACT.]

The project of a railway in Kiusiu has elicited some of the rosy estimates which usually brighten the inauguration of such schemes. The committee appointed by the projectors has held several meetings at Hakata, in Chikuzen, and has drawn up a constitution for the company, as well as a memorial to Government for the concession. The Nichi Nichi Shimbun says that no doubt need be entertained with regard to the assent of the authorities, as Prefect Yasuba, during his recent visit to the capital, conferred with the ministers upon whom the decision will devolve. Of the first section of the proposed line—from Monji-ura, in the province of Buzen, to Misumi-minato, in the province of Higo, about 150 miles in length—the portion lying in the prefecture of Fukuoka, some 90 miles has already been surveyed. Elaborate statistics have also been prepared under Prefect Yasuba's directions, showing the probable earnings of that portion of the section. In these statistics the quantities of products exported from and imported into the prefecture in 1882 are taken as a basis, and ample corrections are applied on account of the difference between the state of the markets then and now. The result is that the maximum weight of the goods which might pass over the line is 956,268,995 catties, and to this total a correction of 30 per cent. is applied on account of other routes. At the rates of 4 and 8 rin a ri per 2 catties of heavy and light goods, respectively, the receipts from this source amount to 159,288 yen. With regard to passengers, the number of persons who traveled to and from Fukuoka in the districts lying along the line in 1882 was 1,094,023. These are divided into middle and lower classes, the transport of the former being estimated at 4 sen and that of the latter at 2 sen apiece per ri (2½ miles). The receipts from this source foot up to 141,194 yen, and the total earnings of the line aggregate 300,482 yen. Two-fifths of the aggregate are put down to working expenses, and the result as to net earnings is 180,290 yen. The cost of construction is estimated at 50,000 yen per ri, giving a sum of 1,800,000 for the whole 36 ri (90 miles), and on this assumption a dividend of over 10 per cent. is predicted. The prospect is said to have aroused much enthusiasm in Fukuoka, and the inhabitants of Osaka and other places.

It will be seen at once that the above estimate includes some points which require modification. The rates for passenger traffic are small—only three-fifths of those charged on the Tokio-Yokohama line, where, according to the Fukuoka estimate, second and third-class tickets should cost 18 sen and 36 sen, respectively, instead of 30 sen and 60 sen as at present. Moreover, the number of persons who have hitherto traveled by road is by no means a fair criterion of the number that would be likely to travel by railway. The tendency of railways is to develop the passenger traffic enormously. The experience of Japan in this respect has been uniform with the experience of Western countries. We should be inclined, therefore, to add from 30 to 50 per cent. to the sum set down against earnings from the passenger source. The case of goods is different. It is true that an inland line, like that under consideration, would be comparatively free from the competition of coasting steamers, though this immunity does not extend to the portion (18 ri) between Monji-ura and Fukuoka, and, further, the Fukuoka road would not have to contend with even river traffic. But for some reason or other the carriage of goods by rail has not yet recommended itself largely to Japanese producers. The Tokio-Takasaki line, for example, in spite of its favorable situation, has not succeeded in attracting this species of traffic to an appreciable extent. Admitting that it is handicapped by the great rivers which traverse the districts it crosses; that its capabilities as a carrier of market supplies are virtually annulled by the inconvenient location of the terminus, and that the directors have not yet laid themselves out seriously to meet the convenience of producers, there still remains the conservatism of the Japanese farmer, who has not learned to set a pecuniary value on his time or on the exercise of his thews and sinews. We should be disposed, therefore, to conclude that the projectors of the Kiusiu line take a too sanguine view when they look forward to obtaining 70 per cent. of the goods' traffic in the district. But the most inexplicable figure in their calculations is the estimate of the cost of construction. No railway in Japan has been built for 50,000 yen a ri. Even the Poronai line cost over 70,000 yen, and it is not to be supposed that the method of construction employed in Hokkaido will be followed in Kiusiu. Three million yen seems a more correct estimate on account of cost of construction than 1,800,000. Such errors of calculation, however, cause incomparably less concern than the wholesale reductions which the floating capital of Japan is undergoing. What with Nakasendo bonds, naval bonds, Kinsatsu exchange bonds, redemption bonds, and Kiusiu railway scrip, it is evident that ability to meet the demands of ordinary commerce is constantly diminished, and that the much-to-be-desired period when such demands will arise is proportionately deferred.

The Mainichi Shimbun recommends the promoters of Japanese railways to intrust the work of construction to American engineers. Public attention has been strongly directed of late to railway enterprise. Lines from Kobe to Shimonoseki, from the north to the south of Kiusiu, from Tokio to Hachioji, and between places in other localities, are projected. The idea that this industry must of necessity be left to officialdom—an idea long maintained—has been abandoned, and capitalists everywhere throughout the Empire are hastening to invest their money in iron roads. But the question of construction is still a difficulty. Most people think that the only feasible course is to enlist the services of the railway department. The Mainichi Shimbun, however, strongly condemns this plan. On the score of delay alone, if for no other reason, such a burden should not be placed on official shoulders. Better employ American engineers, says our contemporary, plenty of whom would be quite willing to undertake the work.

Respecting the intended sale of the Miike coal mine, the Choya Shimbun rejoices that, after its discussion of the affairs of the mine in a series of articles published last autumn, the Government was turned to the subject, and that a

Mitsui Bussan Kaisha, the Government itself until lately worked the mine at a loss, and for several years the agents were the only people who really got any profit out of the concern. Reviewing, however, the prospects of the mine as recently extended, it has little doubt that the reserve price of 4,000,000 yen will be exceeded in the bidding. In 1886 there was a clear profit of 195,000 yen on the year's business, or close upon 5 per cent. on 4,000,000 yen. If to this be added the substantial profits of the agency and the fact that Government works are seldom economically managed, the authorities certainly have not been too sanguine in assuming that the property will fetch at least 4,000,000 yen in the market. The purchasers, however, should be prepared to spend something like a million over and above the buying price, in developing and reforming the whole system of the works. That, with such a total to face, bidders will be numerous can not be expected. And, as nothing could be more undesirable than that this great property should come into the possession of an association of a multitude of small capitalists, it is to be hoped that men of real substance and business capacity will form themselves into syndicates and bid for the mine, which would thus, after its sale, be conducted on sound practical lines. The Choya Shimbun trusts, lastly, that the whole transaction of the sale may be so clear and straightforward, and free from suspicion of jobbery or collusion, as to justify the fullest public confidence.

Continuing the subject in another article the same journal observes that while the recent resolve of the Government is viewed with unmixed satisfaction by the people generally, one or two classes are already grumbling. These classes are, first, persons who enjoy beneficial monopolies of agencies in connection with Government business or properties, and who fear that the example of the Miike mine may be extended to other quarters affecting their own particular interests; and, secondly, share speculators. Certain wise terms in the conditions of sale effectually provide against mere gambling in the Miike mine stocks. On the future of the mine the Choya Shimbun states that the whole quantity of coal is estimated at 230,000,000 tons, enough to last for two hundred and thirty years at 1,000,000 tons per annum; that it is the greatest mine in Japan; and that when the Takashima mine is worked out (which the Choya puts down at seven or eight years hence), Miike alone will furnish the coal for export to Shanghai and Hong-Kong. Hence, the forthcoming sale of the mine to private purchasers is on all accounts commendable, and the Choya regards it as a step not only good in itself, but in a direction fraught with benefit both to the reality and the spirit of commerce in this country.

COTTON-SPINNING INDUSTRY IN BOHEMIA.

It would not be easy to give a comprehensive view of the conditions of cotton-spinning in the whole Austrian Empire, on account of the great diversity of those conditions in the different provinces, and even within each province by itself. In order to present a summary statement of the consumption of cotton, reference was had in my former report to the whole monarchy. In the present exposé I will confine myself mostly to the specific conditions in Bohemia, the local circumstances in other parts of this Empire not being sufficiently under my observation.

COST OF PRODUCTION.

Cotton-spinning in Bohemia is comparatively in a high state of development. Most of the cotton-mills, considering their products, will bear com-

that the cost of production in Bohemia, curious as it may appear in view of the prevailing low wages, is not lower than the cost of production in the English cotton-mills; in fact it is somewhat higher. An explanation of this state of things is found in the following causes:

1. The plant of the Bohemian mills is more costly. There are no spinning machines made in this country, hence the necessity of their purchase abroad. They almost invariably come from England. Of late years Switzerland has to some extent become England's competitor in the making of cotton-spinning machines, and in point of prices this competition has met with some success; but experienced spinners always prefer to buy English machines. The importation of such machines from England involves a heavy expense for packing and transportation, to which is to be added the import duty. The cost of packing with delivery at the English sea-port makes from 10 to 12½ per cent. of the value; and they are packed in heavy, solid boxes which greatly enhance the expense of shipping. The import duty is 3 florins in gold per 100 kilograms, or 200 pounds, the Austrian gold florin being equal to about 48 cents. Formerly the duty was 4 florins, but one-half of the amount was returned by way of restitution, leaving the actual duty paid at the rate of 2 florins per 100 kilograms. Consequently there has been a raise of 50 per cent. in the rate of duty. The expense of packing and transportation together with the duty raises the price of English machines to the Bohemian manufacturer from 25 to 35 per cent. Raw cotton pays no duty, but all other subsidiary materials of the spinning-mills are subject to this class of taxation, and thereby enhanced in price. Card lining, for instance, pays 25 florins in gold per 100 kilograms, belting pays 18 florins, and whatever else is used in this branch of industry is subject to the tariff.

2. The cotton-mills in Bohemia, as a rule, are built on a more expensive scale, with much more regard to comfort and even luxury, than is the case in England. This may be partly a necessity in view of the different climatic conditions, the climate of Bohemia being very changeable, with great extremes of temperature; hence more solid buildings and a more costly protection against climatic influences are demanded.

3. Another cause of the increased cost of production is the high price of coal in Bohemia as compared with its inferior quality, and this is an item of much importance. Both brown coal and common coal is used, according to the facilities of the location. The local freight being generally high, often excessive, there is considerable difference in the cost of the coal when delivered to the consumer. Brown coal of very inferior quality is often sold from 3 to 6 kreuzers per metric centner at the mines, but the cost is raised from 25 to 30 kreuzers (10 to 12 cents) when delivered at the mill. Common coal, also of a poor quality, sells at 20 kreuzers per metric centner at the mines, but is raised to 35 to 40 kreuzers (about 14 to 20 cents) when delivered at the mill.

4. Lastly, the lower grade of labor contributes to the increased cost of production, as will appear from the sequel. The output per spindle, as stated in the previous report, is 1 pound of yarn per week.

MACHINERY AND MODE OF PRODUCTION.

It may be of some interest to state that the principal English firm which furnishes spinning-machines for the Bohemian cotton-mills is that of Platt Brothers & Co., at Oldham. Here and there machines from other firms are used, but it is an exception to the rule.

As already stated in my former report, the production of cotton yarn ranges up to No. 50, the finer grades being rare. The leading numbers manufactured for home consumption are 36 for warp and 42 for weft. For these two popular numbers American cotton is used almost exclusively.

The Bohemian process of manufacture differs from that which obtains in England in regard to the numbers just mentioned, mainly in the manner of carding, which is double in Bohemia, whereas English spinners in most cases get along with single carding. The reason of this is the different character of labor. The workmen employed in the Bohemian cotton-mills are not equal to the mill hands in the cotton-spinning regions of England in point of experience, dexterity, and general aptitude for their work.

Recently the ring-throstle has also been introduced in Bohemia for the production of warp, and wherever the object is to make warp to be used for dyeing purposes, wound and packed in bundles, the yarn produced by the ring-throstle is highly valued. This machine is purchased as a specialty, mainly from the firm of Messrs. Brooks, in Manchester.

A BOHEMIAN SPECIALTY.

Cotton-waste spinning deserves to be mentioned as a specialty of the Bohemian cotton-yarn manufacture. It is carried on as a collateral industry, so to say, by very small spinners, particularly in the region of Reichenberg. The waste cotton from the blowing machines is, in this spinning process, carded on first or breaker cards, to be thereafter put on finishing cards, furnished with a sliding appliance, and forming the fleece which comes from the cards into separate strips. These are rolled into roving and fed directly to the spinning-machine. This manipulation is borrowed from the wool-spinning process, and it produces a perfectly round, cylindrical thread, which comes from the fact that in this mode of spinning there do not occur any drafts before the spinning machine. For this special branch machines are made also in Austria by the firm of Josefy, in Bielitz; in Germany they are made at Chemnitz. This mode of production not being popular in England, the said Austrian and German machine builders have not to contend with any serious British competition, and they have already gained a firm footing.

POWER USED.

The Bohemian cotton-mills have to depend mostly on steam-power, only some establishments in northern Bohemia command sufficient water-power, thereby securing a cheaper mode of production.

WAGES.

In regard to the wages of workmen, it is hardly possible to make a reliable general statement. In the mountain districts wages are materially lower than in other parts of the country. Of course, wages differ also according to the character of the work. At the spinning-machines only men and boys are employed. The spinner is the best paid operative, and his weekly earnings are, according to local conditions, from 5 to 10 florins, or \$1.90 to \$3.80—the florin in currency being equal to a trifle over 38 cents. The boys earn, according to the same conditions of the local labor market, from 2 to 4 florins a week (76 cents to \$1.52). Where ring-throstles are used they are run mainly by girls and boys, whose wages are from 3 to 5 florins per week (\$1.15 to \$1.90).

The other operations are done mostly by female help; drawing frames and flying are done by such exclusively. In the carding-shop the same class of labor is employed to run the machine, the grinding and polishing being performed by men.

The wages of all these subordinate hands are generally a trifle over the wages of common laborers obtaining in the respective district, and they range, according to work and locality, from 3 to 6 florins per week (\$1.15 to \$2.30). The women employed at the reel are paid on the same scale. The wages are generally fixed by agreement, and this is effected in the different special cases so that the above-given figures are obtained.

Concerning the higher class of employés the following may be said: There is a carding-master and a spinning-master. The pay of these employés varies, according to the size of the mill and their ability, between 10 and 30 florins a week (\$3.80 to \$11.50). The clerks employed at the office receive the same pay. The directors, or managers, of the smaller class of mills receive a salary of 1,000 to 2,000 florins a year; in the largest mills they receive from 5,000 to 10,000 florins.

HOURS OF LABOR.

A day's work consists now of twelve hours, the working hours being mostly from 6 o'clock a. m. to 7 o'clock p. m., with dinner time from 12 to 1 p. m. There is, however, in Austria a law fixing the day's work at 11 hours; the longer time being simply a concession to the spinning and textile industry. This concession will end on the 11th of June next. The ministry

SUNDAY WORK.

The new labor laws prohibit factory work on Sunday; only such repairs as are unavoidable may be done on Sunday. On the Catholic holidays work is allowed by law, with due regard to the time needed for attending divine service. But this permission is taken advantage of by only a minority of the mill owners.

FOOD AND DRINK.

The employers do not try in any way to influence the mode of life of their employes. The workmen, as a rule, breakfast on coffee and bread (black or white), without butter. In some cases they only take soup with a piece of bread. For dinner, in the central region of Bohemia, they have meat on several days of the week at least, if not daily. In the mountain districts, however, meat is a very scanty article in the working-man's diet, partly because of the low wages and partly because he is not used to it. Sunday, in most cases, is the only day when meat appears on the working-man's dinner-table. Supper mostly consists of fried sausage and potatoes, with a glass of beer. Most of the workmen take a glass of beer during the working hours in the afternoon; many take a drink of whisky in the morning. There is no great tendency to strong drink among the factory people, and drunkenness is very rare.

CHILD LABOR.

Persons of the age of fourteen to eighteen years employed in the factories are considered youthful workmen. The employment of children under fourteen years used to be quite prevalent, but is now an exception. The compulsory school law prevents, as a rule, the employment of such children in factories.

EDUCATION.

Common school education being compulsory in Bohemia, and the law being actually carried out by the executive power, all the factory people can read and write in their own language. If there are any exceptions they are confined to the aged laborers, whose schooling in their childhood was neglected. — PRAGUE, *April 24, 1888.*

CHARLES JONAS,
Consul.

ECONOMIC STATISTICS OF SWEDEN.

From the annual publication for the year 1886, just issued, known as *Befækning's Statistik, i. e., people's statistics*, I have made some extracts, which I have the honor to submit in this dispatch.

The population of Sweden on the 31st day of December, 1886, was 4,717,180, an increase of 117,000 since 1885.

2,290,340; female, 2,426,849. Of the 34,420 increase a fraction over 20,000 is found in cities and towns, showing the same tendency here, as in other countries, for people to gravitate to the larger centers. There were celebrated 30,133 marriages, the smallest number for the past six years. There were 226 divorces granted. The number of children born was 141,801, of which 69,850 males and 66,516 females were born alive; 2,111 boys and 1,496 girls were born dead. In the city of Stockholm there were born 7,377, of which number 2,121 were illegitimate. The whole number of the latter class born in the Kingdom during the year 1886 was 14,377. The deaths were 78,045 — 39,162 males and 38,883 females. The month of March has the largest death rate, 10 per cent. Scarlet fever and diphtheria were the most fatal type of disease, 3,326 dying from the former and 1,838 from the latter; 1,898 persons died from violence; *i. e.*, from accidents, exposure, and homicide. Of this number 69 were murder, 27 of which number were infanticides. There were 567 suicides, 451 males and 116 females. The total emigration for the year was 32,889, of which number 27,914 went to the United States. There were 5,224 persons of foreign birth who became residents of the Kingdom during the year; 81 of this number becoming naturalized. Twenty-one thousand two hundred and thirty-four persons believe in a religious creed other than Lutheran. The assisted poor amount to 221,911, or 6.73 per cent. of the population of the Kingdom.

For the years 1886-'87 there were 10,154 students in universities, etc., and 746,760 children in the public schools. The total cost of maintaining all institutions of learning for the year was about \$4,000,000. There are 19,981 idiots, blind, and deaf mutes.

In the judiciary department there were 31,315 civil cases contested, and judgments to the amount of 14,489,314 crowns rendered, while 66,108 persons were punished under the criminal and quasi criminal code. Of this number 3,243 were sentenced to terms of imprisonment in state prisons; in the remainder only work-house sentences and fines were imposed. The bankruptcy court adjudicated 7,424 cases, while in the court of arbitration there were 61,023 cases submitted.

The number of persons in poor-houses at the close of the year were 221,911, a slight decrease over the past five previous years. I have not been able to obtain the aggregate value of all property held in the Kingdom, and its per capita distribution. The great majority of the people are poor, many extremely so, as is shown from the "assisted" class, comprising, as it does, nearly 7 per cent. of the population.

Upon the showing herein given I make no comment, except to remark that they are not very encouraging either from a social or economic view.—
STOCKHOLM, May 5, 1887

RUFUS MAGEE.

MINING CONCESSIONS IN ASIA MINOR.

Since making my report on mines in Asia Minor, published in the February number of the CONSULAR REPORTS, an important step in the development of the mineral resources of the Empire has been taken in the convention recently concluded between the Ottoman Government and M. Leonidas Baltazzi for the working of mines. The concession provides for the development and working by a company of the state mines, and such other mines as the company may acquire, under the mining laws of the Empire. The main features of the concession are as follows: The promoter, M. Baltazzi, engages to form a company under the name of the "Société minière de l'Empire Ottoman," with a capital stock of £2,000,000. When one-fourth of the capital stock has been paid in the Government will cede to the company the following mines on a cession of ninety-nine years.

Argentiferous lead mines. — Gumush Hadjikeuy, in the vilayet of Sivas; Akdagh, in the sandjak of Yosgat; Cosan Dag and Culek, in the vilayet of Adana; Gheban, in the vilayet of Mamowut-ul-Aziz; Cartova, in the vilayet of Kassova; Armondeli, in the vilayet of Trebizond; Sirmanoi, in the vilayet of Trebizond.

Lead mine. — Berekēlli, in the vilayet of Konia.

Copper mines. — Esseli and Carakaya, in the vilayet of Trebizond; Halvali, in the vilayet of Erzeroom; Alanyourt, in the vilayet of Sivas; 100 chine in the vilayet of Diarbekir.

A certain portion of the capital, to be agreed on by the Government and the company, is to be allotted for the working of each mine. At the end of each year the net profits of each mine are to be divided as follows, after paying 6 per cent. interest on the capital employed in working the mine: 40 per cent. to the Government, 40 per cent. to the company, 10 per cent. to the promotor, and 10 per cent. for a reserve fund.

The concession contains the following somewhat ingenious provision regarding possible losses: "If (which may God forbid) there prove to be a loss instead of a gain, it shall be borne exclusively by the company, with the right to offset the same against the reserve fund, if there be any." The company may, with the consent of the Government, abandon any mine proved to be unprofitable on giving six months' notice. The promoter engages to deposit within one month £20,000, to be forfeited to the Government in case the company is not formed or the work begun within the prescribed period. A commissioner, appointed by the Government and paid by the company, is to be present at all the meetings of the company to protect the Government's interests. The Government may also appoint inspectors, who shall be authorized to investigate the working of the mines and the books of the company at all times. All employés of the company must be natives of the country, except foremen and engineers, who may be foreigners. — SIVAS, May 17, 1888.

LABOR IN THE BRITISH COLONIES.

A general view of the state of the labor market in the colonies points to much the same conditions as existed a year ago. In Canada there is little change to notice. In the Australasian colonies the depression of trade is certainly less marked than it was; but in Sydney, at any rate, it would seem that there is still a large amount of superfluous labor. In these colonies the question of water supply is all-important, depression being in great measure the consequence of drought. Hence the prominence which is now being given to irrigation, and the interest which has been excited by such undertakings as Messrs. Chaffey's colonies on the Murray River in Victoria and South Australia. In South Africa there can be no doubt that the opening of the Transvaal gold fields has lightened the labor market to a large extent; at the same time it is difficult to point to any distinct and definite demand for any special kind of labor from the outside. British Bechuanaland has attracted much attention lately, but it is, at present, too little developed and too difficult of access to be recommended as a field of emigration to the ordinary British laborer, wanting both capital and experience.

In speaking of the demand for labor in the colonies, it must be borne in mind that each year adds to the facilities for reaching one colony from another in the same part of the world, or one district from another in the same colony. Consequently, a demand for labor of no great permanence or magnitude in any locality may be supplied from a district where labor is less remunerative, without leaving in turn any great gap to be filled up from this country.

At the present time, when there is apparently a growing inclination in this country to promote emigration, it should be fully realized how strong a feeling exists in most of the colonies against the unrestricted and indiscriminate admission of immigrants. This feeling is due partly to the objection of tax-payers to pauper immigrants, partly to the objection of workmen on the spot to competition in the labor market, which may have the effect of reducing the rate of wages. As regards the first of these points, there is constant evidence that the term "pauper" can be given a very wide interpretation, and that the reasonable prejudice against bona fide paupers may be easily extended so as to cover a much wider circle of cases. As regards the second, the influence of trades-unions, far stronger in the colonies than at home, is obviously directed against mechanics rather than against farm laborers; and exaggerated and unreasoning as the opposition to immigration from this source has become, it is ultimately based on two undeniable facts, (1) that farm hands are most wanted in new countries where the land to be opened up is very extensive and the population to be ministered to is very small; (2) that the towns in the colonies as at home, tend to be overstocked. It would seem, then, that promoters of emigration in this country, in order to be in harmony with public feeling in the colonies, should aim at three main objects, (1) sending out emigrants supplied with some small means; (2) securing, by public or private agencies, that they are sent straight up-country from the port of landing; (3) that they are supplied mainly from the country population at home.

By carrying out this last object the congestion of labor in the great towns of this country may be to some extent relieved. Men constantly come to this office, asking whether they are eligible for free passages as farm laborers, who are found, on inquiry, to have migrated some years back from the country to the town, and there too often to have swelled the numbers of the unemployed. Had they remained in the country they would have been qualified for selection as capable farm hands; they would have been welcomed in the colonies instead of losing the advantages of their early training and becoming, as in many cases they are, worse than useless in London.

It is from recognizing the necessity of looking for quality rather than numbers in the selection of emigrants that much favor at the present time

to take their chance in a strange country. Schemes of this kind imply bringing in a certain amount of capital, introducing carefully selected settlers, and opening up a definite area as opposed to indiscriminate squatting. It may be mentioned, in this connection, that the governments of South Australia, Queensland, and New Zealand have by legislation in late years encouraged allotments and the formation of village settlements, with the view of making it easier for laboring men to settle on the land, than would be possible by isolated action.

It would be outside the province of the committee to offer any criticisms on the practical difficulties of colonization, but they may point out that the success of such schemes depends entirely on careful selection and continued supervision, difficult in most cases to maintain in distant lands, and that much valuable guidance on this and kindred subjects might be gathered from the records of the colonial land and emigration board; which, a few years ago, formed a subordinate department of the colonization office.

In their last report the committee offered a few words of advice to intending emigrants of the working class. The special circumstances of each individual case must determine a man, whether he should go, where he should go, and when he should go. But, comparing the three great fields of emigration, the climate of Canada makes the time of arrival in the Dominion the most important consideration. Distance and expense of voyage are the main drawback of the Australasian colonies to an intending emigrant; while, in the case of South Africa, he has to consider not only the cost of passage, but also the fact that there is a supply of native labor already on the spot.

There is no colony where a man willing to work, able to work, and indifferent to the kind of work, will not get a living; but agriculturists should be warned that farm work at home is one thing, and in the colonies quite another, and that the conditions of country life in Canada, Australasia, and South Africa are, as a rule, far rougher and lonelier than in England.

Men who have not been from their childhood engaged on the land must remember that in new countries there is not the same strong line drawn between different trades and different branches of the same trade as in our own; and that, therefore, the more specialized a man has become in his work and calling, the less fitted he is to emigrate, partly because he is unlikely in most cases to find an opening in his own speciality in the colonies, partly because he is not well suited to turn his hand to general labor.

Lastly, the warning which the committee have found necessary to insert in their quarterly circulars to the effect that a high rate of wages does not, in the colonies, necessarily imply demand for labor, may well be repeated here. The struggle for existence is not the same in the colonies as at home. Living is, as a rule, an easy matter. Workmen are a stronger element. But the net result in many of the Australian towns, at any rate, is, that while wages are high and hours are short, as compared with the conditions of this country, steady continuous remunerative work is not always to be had; and high wages on three or four days may be counterbalanced by no wages at all during the rest of the week.—*From report on the Emigrants' Information Office, April 26, 1888.*

AMERICAN BREADSTUFFS IN SWEDEN.

Owing to the fact that corn is the only breadstuff that is imported in any considerable quantity directly into Sweden from the United States, it is impossible to ascertain what proportion of the other grain brought into this country is produced in the United States; but of the various breadstuffs that may be indirectly imported, the only varieties that can be considered as possible products of the United States are wheat, wheat flour, and corn, which are brought here from Denmark, Germany, Great Britain, Belgium, and Norway. Undoubtedly a large portion of these imports are produced in the United States, and are merely re-exported from the countries mentioned.

The following table shows the importation of corn, wheat, and wheat flour for the years 1885 and 1886:

<i>Importations of corn, wheat, and wheat flour for the years 1885 and 1886.</i>									
	Corn.		Wheat.		Wheat flour.		Total.		
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	
	Pounds.	Dollars.	Pounds.	Dollars.	Pounds.	Dollars.	Pounds.	Dollars.	
1885.	11,090,683	141,828	35,440,163	603,154	66,469,783	1,696,869	113,000,629	2,441,831	
	4,427,082	56,636	39,878,921	678,697	18,659,110	475,338	62,965,113	1,210,671	
	3,898,231	49,757	6,090,301	103,650	108,014	2,787	10,096,546	156,194	
	42,277,252	539,637	.....	.....	.....	.....	42,277,252	539,637	
	.....	.....	.....	.....	.....	.....	745,277	19,035	
	61,693,248	787,858	81,409,385	1,385,501	85,982,184	2,194,029	229,084,817	4,367,388	
1886.	7,650,001	88,873	28,050,228	377,821	60,233,400	1,464,442	95,933,629	1,951,136	
	.....	.....	22,557,398	319,919	22,651,267	550,715	45,208,665	870,635	
	942,258	10,894	2,557,503	36,271	35,582	865	3,535,343	48,031	
	15,096,586	174,344	.....	.....	54,453	1,323	15,151,039	175,668	
	.....	.....	.....	.....	1,399,785	34,032	1,399,785	34,032	
	23,688,845	274,111	53,165,129	754,011	84,374,487	2,051,377	161,228,461	3,079,502	

ERNEST A. MAN,
Consul.

THENBURG, May 26, 1888.

THE CHINA RAILWAY COMPANY.

The China Railway Company, which was started about a year ago to run from the Hai-Ping mines to the Peiho river and thence to Tien-Tsin, has, according to a report which appeared in the Shih Pao (a Chinese newspaper published at Tien-Tsin), completed their line to Fangku, a point on the Peiho river. On the 21st of last month the train began to run from this place to the mines.

All the material—locomotives, carriages, freight wagons, etc.—have arrived. The remaining section of the line will be pushed with unremitting energy, and the directors of the company hope that by July or August the road will be completed to Tien-Tsin, when it will be able to work at its full capacity.

I understand that, as the lines when complete will cost at a very cheap rate, the working will be cheap, and the most rigid economy will be enforced, it is certain that the enterprise will be profitable to the shareholders and of great advantage to the districts accommodated.—PEKING, *May 1, 1888.*

CHARLES DENBY.

COMMERCE, NAVIGATION, AND AGRICULTURE OF NETHERLANDS INDIA.

A work lately published here, and intended as a guide-book of agricultural and commercial enterprises in Netherlands India, contains a review of the principal commercial, culture, and other companies which are at this time operating in the Netherlands and Netherlands India as anonymous associations.

The large and constantly increasing business intercourse between the United States and this country and its colonial possessions, and the great interests our merchants, manufacturers, and producers have in the production of and trade in many of the products of the Dutch Indies, induces me to extract and transcribe from the above mentioned work as follows:

TABLE A.—*Commerce, transportation, and traffic.*

Institutions.	Capital.	Dividends.		Stock quoted at—
		Year.	Per Ct.	
Nederlandsche Handelmaatschappij, established 1824, Amsterdam.....	<i>Florins.</i> 35,783,000	1882 1883 1884 1885 1886	5.3 7 4 5.9 2.5	119¾
Javasche Bank 1828, Batavia	6,000,000	1882 1883 1884	9.5 12.5 13	

TABLE A. — *Commerce, transportation, and traffic.* — Continued.

Institutions.	Capital.	Dividends.		Stock quoted at—
		Year.	Per Ct.	
	<i>Florins.</i>			
Nederlandsch Indisch Handelsbank, 1863, Amsterdam.....	7,200,000	1882	6.7	52 $\frac{3}{4}$
		1883	6.1	
		1884	.....	
		1885	2 $\frac{2}{18}$	
		1886	.....	
Koloniale Bank, 1861, Amsterdam	5,000,000	1882	5	44 $\frac{5}{8}$
		1886	.....	
Internationale Crediet en Handelsvereeniging, Rotterdam.....	5,000,000	1882	9.2	75 $\frac{1}{2}$
		1883	6	
		1884	2	
		1885	3.2	
		1886	.....	
Handelsvereeniging Amsterdam, 1879, Amsterdam	2,500,000	1882	1.5	87
		1883	9	
		1884	5	
		1886	.....	
Moluksche Handelsvennootschap, 1881, Amsterdam	1,000,000			90
Nederlandsch-Indische Ecomptomaatschappij, 1857, Batavia.....	1,000,000	1882	8.5	100
		1883	7.5	
		1884	7.5	
		1885	7.5	
		1886	.....	
Nederlandsch-Indische Stoomvaartmaatschappij, 1856, The Hague.....	5,589,360	1882	12	
		1883	10	
		1884	8	
		1885	8	
		1886	.....	
Stoomvaartmaatschappij Nederland, 1870, Amsterdam.....	7,000,000			135
Stoomvaartmaatschappij Rotterdam, 1881, Rotterdam.....	1,300,000	.....	.....	
Rotterdamsche Lloyd, 1883, Rotterdam.....	8,000,000	.....	.....	
Nederlandsch-Indische Spoorwegmaatschappij, 1863, The Hague.....	11,450,000	1882	8.75	
		1883	8.25	
		1884	8.25	
		1885	7.5	
		1886	2	
Bataviasche Ooster Spoorwegmaatschappij, 1884, Amsterdam.....	1,700,000	1884	4.5	
		1885	4.5	
Deli Spoorwegmaatschappij, 1880, Amsterdam	2,600,000			100
Java Spoorwegmaatschappij, 1884, Amsterdam.....	1,440,000	.....	.....	
Nederlandsch-Indische Tramwegmaatschappij, 1881, Amsterdam.....	5,000,000	1884	3	
		1885	3	
		1886	3	
Samarang-Joana Stoomtrammaatschappij, 1881, The Hague	4,000,000	1882	2 $\frac{1}{2}$	
		1883	2	
		1884	3.5	
		1885	5	
		1886	.....	
Maatschappij tot Exploitatie van droogdokker, en reparatiewerken in Nederlandsch Indie, 1885, Batavia.....	1,000,000	1885	1.6	

TABLE B.—*Agricultural industry.*

Name.	Capital.
	<i>Florins.</i>
Amsterdamsche Deli-Compagnie, 1879, Amsterdam.....	700,000
Deli Handelmaatschappij, 1887, Amsterdam.....	650,000
Batjanmaatschappij, 1881, The Hague.....	2,400,000
Cultuurmaatschappij Ampel Gading, 1882, Rotterdam.....	1,000,000
Delimaatschappij, 1876, Amsterdam.....	2,900,000
Kinamaatschappij Soekawana, 1884, Amsterdam.....	9,000,000
Oost Java Cultuurmaatschappij, 1881, Amsterdam.....	500,000
Palembang-Maatschappij, 1886, Amsterdam.....	2,400,000
Tabakmaatschappij Arendsborg, 1877, Rotterdam.....	1,000,000
Tanah-Wangi-Maatschappij, 1876, Amsterdam.....	1,000,000
Billitonmaatschappij, 1860, The Hague.....	2,025,000
Mijnbouwmaatschappij Salida, 1881, Amsterdam.....	300,000
Oost Sumatra Mijn en Landbouwmaatschappij, 1885, Amsterdam.....	1,200,000
Bagelen Thee en Kinamaatschappij, 1883, Batavia	650,000
Deli-Batavia-Maatschappij, 1875, Batavia.....	1,000,000
Cultuurmaatschappij Sinagar-Tjirohani, 1884, Batavia.....	650,000
Batoe-Bahra Tabakmaatschappij, 1885, Batavia.....	500,000
Amsterdamsche Koffie cultuurmaatschappij, 1884, Amsterdam.....	400,000
Boekit-Gompong Cultuurmaatschappij, 1880, Amsterdam	225,000
Cultuurmaatschappij Djarangan en Boro, 1882, Rotterdam.....	200,000
Cultuurmaatschappij Kali Bening, 1882, Rotterdam	300,000
Cultuurmaatschappij Loeboe Raja, 1881, Rotterdam.....	300,000
Cultuurmaatschappij Tjeleng, 1883, Amsterdam.....	100,000
Cultuurmaatschappij Goenoeng Sarie, 1885, Rotterdam.....	150,000
Deli Tabakmaatschappij Karang Gading, 1885, Amsterdam.....	250,000
Kalimaas Cultuurmaatschappij, 1884, Rotterdam.....	315,000
Kina-Cultuurmaatschappij Chinchona, 1880, Amsterdam.....	220,000
Kina-Cultuurmaatschappij Garoet, 1881, Amsterdam.....	120,000
Kinamaatschappij Melatti, 1884, Amsterdam.....	200,000
Kinamaatschappij Djajagiri, 1885, Haarlem.....	250,000
Koffie-en Kina onderneming Tjempaka Warna, 1884, Amsterdam.....	200,000
Maatschappij tot Exploitatie der Koffie onderneming Mobo, 1884, Amsterdam	300,000
Maatschappij tot Exploitatie van het koffie land Tanaw, 1884, The Hague.....	200,000
Maatschappij tot Exploitatie van het land Soember Tjoelang, 1885, Dordrecht	240,000
Nederlandsch-Indische Landcommmaatschappij, 1884, Amsterdam.....	9,000,000
Nederlandsch-Indische Cultuurmaatschappij, 1884, Amsterdam.....	300,000
Cultuurmaatschappij Kemloko, 1885, The Hague.....	420,000
Djoeleg Exploitiatiemaatschappij, 1886, Amsterdam.....	125,000
Rotterdamsche Kinamaatschappij Tjikembang, 1883, Rotterdam.....	.....
Tawangredjo Cultuurmaatschappij, 1883, Rotterdam.....	450,000
Borneo Mijnmaatschappij, 1884, Amsterdam	288,000
Maatschappij Goenoeng Waringin, 1879, Batavia .....	.....
Maatschappij Tjiseureuh, 1883, Batavia.....	300,000
Maatschappij Babajang, 1883, Batavia.....	300,000
Kinamaatschappij Tjimonteh, 1883, Batavia.....	129,000
Maatschappij Panjairan, 1883, Batavia.....	300,000
Maatschappij Pasir Telaga Warna, 1883, Batavia	350,000
Batavia-Kinamaatschappij, 1883, Batavia.....	160,000
Kina-Cultuurmaatschappij Preanger, 1883, Batavia.....	300,000
Tjidammer-Cultuurmaatschappij, 1883, Batavia	300,000
Maatschappij Masarang, 1881, Batavia.....	320,000
Kina-Cultuurmaatschappij, 1882, Batavia	210,000
Lebak-Cultuurmaatschappij, 1883, Batavia.....	140,000
Maatschappij Soekaradja, 1884, Batavia	100,000
Cultuurmaatschappij Sindangsarie, 1884, Batavia.....	.....
Cultuurmaatschappij Permati, 1886, Batavia.....	.....

TABLE B.—*Agricultural industry*—Continued.

Name.	Capital.
	<i>Florins.</i>
Kina-Cultuurmaatschappij Tjitius, 1883, Bandseng.....	200,000
Yennootschap Gogoniti, 1883, Semarang.....	200,000
Kpbon-Agoengmaatschappij, 1883, Semarang.....	200,000
Maatschappij Poendoeng, 1883, Semarang.....	200,000
Indigomaatschappij Plosso, 1885, Semarang.....	60,000
Cultuurmaatschappij Gawok, 1885, Semarang.....	100,000
Indigomaatschappij Tjaroeban, 1885, Samarang.....	60,000
Landbouwmaatschappij Djambé Tawon, 1886, Semarang.....	15,000
Maatschappij Kali Glidik, 1883, Soerabaya.....	200,000
Maatschappij Soember Wader, Soerabaya.....	
Maatschappij Kwi Sari, Soerabya.....	100,000
Maatschappij Land Djeplak, Soerabaya.....	140,000
Adi-Redjo Kinamaatschappij, 1883, Soerabaya.....	150,000
Maatschappij Oentoeng, 1882, Soerabaya.....	400,000
Suikerfabriek Oeteran, 1883, Soerabaya.....	300,000
Suikerfabriek Kaliwoengoe, 1884, Soerabaya.....	15,000
Bezoeki Cultuurmaatschappij, 1884, Soerabaya.....	550,000
Maatschappij tot Exploitatie van de Kinaonderneming Telaga Patengah, 1884, Soerabaya.....	550,000
Maatschappij tot Exploitatie van de Suikerfabriek Assem Bagoes, 1884, Soerabaya.....	115,000
Maatschappij Bedali, 1883, Soerabaya.....	
Ledgerwood Company, Pasoeroean.....	180,000
Cultuurmaatschappij Bandoeroto, 1885, Probolingó.....	410,000
Landbouwonderneming Mendoet, 1882, Jogjakarta.....	300,000
Cultuurmaatschappij Batoe Djamoës, 1886, Soerakarta.....	60,000
Cultuurmaatschappij Tarik, 1886, Soerakarta.....	
Indigo onderneming Garoem Blitar, Blitar.....	
Blitar Tabakmaatschappij, Kediri.....	130,000
Maatschappij tot Exploitatie van het land Djengkol, 1885, Kediri.....	150,000
Kina-Cultuurmaatschappij, Tjilongkrang, 1886, Padang.....	
Langkat Associatie, east coast of Sumatra.....	
Paja Djamboe Company, east coast of Sumatra.....	
Galang Tobacco Company, east coast of Sumatra.....	
Société des colons explorateurs, Deli.....	250,000
Veeteelt onderneming Argalinga, 1885, Batavia.....	660,000
Naamlooze Vennootschap Cultuurmaatschappij Penampean, 1886, Semarang.....	600,000
Cultuurmaatschappij Triagan, 1886, Semarang.....	
Naamlooze Vennootschap Maatschappij tot Exploitatie der Pamanoe kan en Tjiassemlanden, 1886, Batavia.....	7,500,000
Naamlooze Vennootschap Houtaankap Siak, 1886, Laboean-Deli.....	90,000
Naamlooze Vennootschap Cultuurmaatschappij Bintang, 1887, Blitar.....	100,000
Naamlooze Vennootschap Landbouwmaatschappij Struiswijk, 1887, Batavia.....	302,400
Naamlooze Vennootschap Maatschappij tot Exploitatie van het land Pantjoer, 1887, Sitoebondo.....	120,000
Maatschappij tot Exploitatie van de suiker ondernemingen Sentanen-lor, Brangkal en Dinoyo, 1887, Soerabaya.....	1,800,000
Naamlooze Vennootschap Cultuurmaatschappij Pagottan, 1887, Batavia.....	200,000
Naamlooze Vennootschap Borneo Tabak Maatschappij, 1887, Batavi.....	240,000
Naamlooze Vennootschap Maatschappij tot Exploitatie van de Koffie onderneming Soeko Ramé, 1887, Soerabaya.....	450,000
Naamlooze Vennootschap Cultuurmaatschappij Soekamangli, 1887, Semarang.....	200,000
Naamlooze Vennootschap Tegoewangie, 1884, Soerabaya.....	39,500
Naamlooze Vennootschap Kredjo, 1886, Soerakarta.....	41,500
Naamlooze Vennootschap Maatschappij Kredjo, 1886, Soerakarta.....	1,918,000
Exploitatie van zekere landen, Soerabaya*.....	

TABLE B.—*Agricultural industry*—Continued.

Name.	Capital.
	<i>Florins.</i>
Karang-nonjko Maatschappij, 1881, Blitar	120,000
Maatschappij Kandat (Bangsri), Kediri.....	
Maatschappij Padangsche Koffiepelmolten, Padang.....	
Maatschappij tot Exploitatie van het erfpachtsperced, Kota Znijdwijn, Padangsche Bovenlanden.....	
Naamlooze Vennootschap Cultuurmaatschappij der Vorstenlanden, 1888, Amsterdam.....	10,265,000
Naamlooze Vennootschap Koffie en Kina-Cultuurmaatschappij Pagilaran, 1888, Amsterdam	1,000,000
Naamlooze Vennootschap Siak Tin en Landbouwmaatschappij, 1888, Amsterdam	2,400,000
Naamlooze Vennootschap Cultuurmaatschappij, Gending, 1888, Amsterdam	500,000
Naamlooze Vennootschap Kina Cultuurmaatschappij Tjikembar, 1888, Amsterdam.....	100,000

INSURANCE COMPANIES.

The hand-book from which I copy recounts the names of eighteen marine and fire insurance companies engaged in transacting business in and in connection with the Dutch East India colonies, and mentions certain details relating to the character and status or operations of each. Therefrom I observe that the headquarters of these companies are located at Batavia, Soerabaya, or Semarang, in Java, and only in two cases at Amsterdam. Their aggregate capital is stated to amount to about 44,000,000 florins. They, all of them, almost without exception, it would appear, are doing a more or less prosperous business, as the shares of their capital stock are, nearly as to those of each company, quoted above par, ranging from 100 to 260 per cent. The greater number of them also declared and paid large dividends for the years 1882-'86, in certain instances over 20 per cent.

TABLE C.—*Other branches of industry.*

Name.	Capital.
	<i>Florins.</i>
Nederlandsch-Indische Gasmaatschappij, 1863, Rotterdam.....	1,750,000
Nederlandsch-Indische Industrie; Fabrick van Stoomwerktuigen te Soerabaija, 1878, Rotterdam..	625,000
Bataviasche IJsmatschappij, 1886, Rotterdam.....	350,000
Nederlandsch-Indische Cement onderneming Bintang, 1886, Batavia.....	300,000
Naamlooze Vennootschap Mestfabrick Semarang, 1886, Semarang.....	150,000
Javasche Vischrederij, 1884, Batavia.....	135,000

In concluding I would remark that under agricultural industry, as relating to the colonies, is in Holland understood the cultivation, raising, growing, and producing crops of every variety and peculiar to that part of the world, embracing coffee, tobacco, sugar, tea, rice, cocoa, spices, indigo, cinchona, and many other articles.

If any parties in the United States at any time require or desire more explicit information concerning one or another of the institutions mentioned, it will always be cheerfully furnished by me if in my possession or obtain-

NORFOLK ISLAND AND ITS RESOURCES.

Norfolk Island is situated in the southwestern Pacific, in (Pier.) $29^{\circ} 3' 45''$ south latitude and $167^{\circ} 58' 6''$ east longitude, 980 miles ENE. from Sydney, New South Wales, and about midway between the north cape of New Zealand and the French island of New Caledonia, distant about 380 miles from either point; its dimensions are about 5 miles long by 3 miles wide, with a total area of 8,600 acres. Just outside the limits of the tropics, the extremes of temperature are never reached, the climate being most equable, the thermometer at no time ranging higher than 84 degrees in summer and never lower than 46 degrees in winter. Discovered by the celebrated navigator Cook in one of his early voyages (1774), and described as densely wooded to the water's edge, the island now presents a very different appearance indeed, open park-like downs interspersed by stately groups of the handsome and indigenous pine (*Arancaria excelsa*) meeting the eye in every direction, Mount Pitt (1,028 feet), with its connecting range, and the low-lying adjacent lands to the northwest being the only wooded parts of any consequence. Originally settled by Phillip Gidley King, a lieutenant in King George's navy, in 1788, by a mixed party of convicts and free persons, they lost their vessel, the *Supply*, on the south reef, and after surmounting innumerable difficulties and hardships, formed themselves into a very happy and contented community. But there were breakers ahead. Surrounded, as the island is, except in a few places, by a barrier of perpendicular rocks, abrupt precipices marking almost the entire coast line, it is, as a matter of course, most difficult of access; permeated, besides, by its dreary isolation and monotony, it was peculiarly adapted for the purpose that the English Government had in view, viz, a convict settlement. So, therefore, in 1809, orders were issued to break up the little colony and deport it to Tasmania, which arrangement, much against the wish of many of the colonists, was carried out.

From that time forward, with but little intermission until 1856, the island was used as a convict settlement of the worst type, where irreclaimable prisoners weeded out from the jail-yards of Tasmania and New South Wales were sent, and the place became, as was aptly described by a distinguished botanist visitor, "a hell within a paradise." About the year last mentioned, and early in the fifties, it was understood that the English Government had it in contemplation to abandon the settlement, the results not being such as to justify the expense; consequent, on this intimation, the many influential friends in England of the Pitcairn islanders (descendents of the well-known Bounty mutineers), who, it was stated, were getting overcrowded in their present abode, made strong representation to the Government to have the

it was thought that the climate, surround-

erous buildings, implements, and stock, over to this interesting people, descendants really of those unruly men who, in 1788, defied her grandsire's authority and turned his captain adrift on the open sea—a noble revenge, indeed. The arrangements for transshipment were soon made, and a few months later a ship appeared at Pitcairn, and the whole community, every soul, ninety-five all told, bag and baggage, with their magistrates, chaplain, laws, and peculiarities embarked in the *Morayshire* and sailed for their new home, 3,000 miles away, arriving at Norfolk Island on June 8, 1856, and thus began the present occupation; all that remained of the convict element, every human being, being taken away in the same vessel. A year later, however, a few who were discontented, one or two families, and a few years later again some three or four more, deserted and found their way back to the old home, these few forming the nucleus of the present community there. Kington, the town, is on the south side and was the center of operations during the old régime, and is also now the principal mart for trade. Most of the old private houses are occupied, but the public buildings, with the exception of the commissariat store and the two soldiers' barracks, are in ruins, the inhabitants, which are fast increasing, being scattered all over the island in neat wooden tenements built by themselves. Immediately confronting the town are two small islands or islets, Phillip and Nepean, which afford some little shelter to the pier, which is situated on this side and is indeed the principal landing-place; here most of the business of the island is effected, but on the north side there is also a good landing-place, used when the wind is south or southwards and the pier unapproachable. There is, however, anchorage at both places when the wind is off shore, but that on the south is in bad odor on account of the rocky or foul bottom, while the north side, where the seas appear to be calmer and the holding ground better, is in much more repute with mariners. All the traffic has to be done with whale boats, which are marvelously well handled by the islanders, who often work in waters that would daunt the ordinary boatman, managing their craft with wonderful skill and dexterity. The signals for landing are few and simple: Ensign, good landing; a dark flag over ensign or red flag, go to cascade; dark flag alone, no landing either side.

The soil is exceedingly fertile, composed, as it is, of a dark chocolate loam, or decomposed basalt, and will grow almost any subtropical production beside those of a colder latitude, the temperate climate and the absence of frost being particularly adapted to almost any growth; sweet and Irish potatoes, yams, arrow-root, bananas, coffee, sugar-cane, maize, oranges, lemons, apples, rose-apples, lognats, date-plum, mango, cheromoyer, peach, etc., thrive equally well and give good results. The native vegetation is almost wholly peculiar, and includes the before-mentioned conifer (*Arancaria excelsa*), a palm (*Areca baneri*), and a tree fern (*Alsophila excelsa*), all of which are stated to be the handsomest of their tribes, and are in much repute with neighboring nurserymen; there are besides upwards of thirty different kinds of ferns.

very durable, and are largely used for fencing and domestic purposes. Only about 400 of the nearly 4,000 acres already alienated are under cultivation, the rest, being well-grassed in places, are grazed over by the sheep, cattle, and horses that roam at will over the uninclosed waste lands. There is, however, a deadly pest in three plants which appear to be steadily advancing, notwithstanding a portion of every year is set apart for their destruction; the plants or weeds alluded to are two solanums (*Sodomacum* and *Auriculatum*) and *Cassia lavigata*. The community gain a subsistence by whaling and agriculture principally. The men are expert whalers, and are in much repute in our whale ships that cruise in these seas, and in the season when the whales (the humpback) come about, from July to October, inclusive, follow the occupation with assiduity and celerity, the business being most congenial to their habits, which is very "watery." Ordinarily about seven boats are manned, which, in fine weather, every day are launched and with varying success cruise around the island. The average "take" is about 50 tons, which is usually sold on the spot, £22 per ton being the price obtained for last season's oil; a price, considering the heavy working expenses, that leaves little margin to the whalers. All, however, do not depend on this business alone for a livelihood, some few devoting their attention solely to farming, but the occupations are generally mixed, the whalers cultivating their farms in bad weather, but as a matter of fact nearly everything depends on the success of the fishery. The staple crops of the cottage farms are Irish and sweet potatoes, maize, bananas, and culinary vegetables, which find a ready sale on our whalers, which periodically call for recruits and fresh meat, the trade being carried on by barter, United States cloths and denims being in good repute here; indeed all the boats and gear of the island bear the New Bedford stamp; the men would not look at any other.

The government of the island by powers granted by Her Majesty is home rule, pure and simple, and is vested in three officials — a chief magistrate and two councilors, who are elected annually by the people, the chief magistrate being responsible, and the medium of communication with the higher officials. The three magistrates act under commissions bearing the great seal of the colony, issued by the governor of New South Wales, who, himself, holds a separate authority as governor of Norfolk Island. The governor has, in fact, unlimited power, but holds a very mild sway, allowing the islanders to do very much as they like so long as they do not go too far. The laws are few and primitive, and could be printed on two sheets of foolscap; nevertheless they answer the purpose well, there being no crime to speak of, nor any lock-up or need of one. There is no revenue except a few waifs and strays in the shape of small fines, etc., which seldom amount to

the master's salary of £1.10 (\$7.50) per

and began with the sale of 1,000 acres of land to the Melanesian mission. The land tenure—the whole island is subdivided into 50-acre lots—is held in what, in forensic parlance, is called peppercorn grants; the original immigrants from Pitcairn received 50 acres apiece; that is, the elders or heads of families, and likewise for some years after each couple when they married got the same concession. Early in the seventies, however, this was changed, young married couples only getting 25 acres, until in 1884 when the then governor, Lord A. Loftus, visited the island, he refused peremptorily to issue any more grants, on the plea that what was already given was not utilized anything like what it ought to be, and ever since the land question has been a vexing and exercising topic; this, together with annexation to New South Wales, first mooted by the English authorities about eighteen months ago and strenuously, to a man, opposed by the islanders, has of late caused much anxiety to the more thinking portion of the community.

The imports include clothing, groceries, agricultural implements, and timber for building purposes; the exports, oil, wool (output generally 14 to 17 bales), horses, sweet and Irish potatoes, onions, bananas, and sometimes sheep. The oil and wool go either to Auckland or Sydney, the latter port taking besides sweet potatoes and bananas, but for other produce such as horses, onions, Irish potatoes, etc., Noumea, at present, is the only market open to us, and so far with good results. The importation of liquor, except for medical purposes, is absolutely prohibited; the law is strict and the people care little for it; there are no duties, and consequently no custom-house or any other record kept, but the imports and exports together in a favorable year would probably amount to £6,000. Our communications at one time were very erratic, but now and for some time past a great improvement has taken place. From Auckland comes a trading schooner four or five times, and the mission vessel twice (March and July) a year, and the New South Wales Government gives a small subsidy to a Fiji trading steamer to make quarterly calls. Formerly all letters, etc., converged at Auckland and were sent as opportunity offered, but now since the new arrangement at Sydney any mail matter that finds its way there is stopped and sent on by the steamer. The population of the island on December 31, according to the registrar's returns, was 741 all told, viz: Norfolk Island community, 248 males, 276 females = 524; Melanesian Mission, 169 males, 48 females = 217. The return particularizes them as follows: Norfolk community, married couples, 78; widows and widowers, 9 and 10 respectively; above the age of fourteen, 78 males and 66 females; under that age, 114 males and 128 females; strangers, 4 males and 3 females; absent from the island, 36 males and 8 females; Melanesian mission, whites, 14 males and 8 females; blacks, 158 males and 43 females; absent from the island, 3 males and 3 females—white.

The stock returns for the past year

The sanitary condition of the island is good, the death-rate exceeding low, averaging 9 per 1,000. There is usually little sickness and an entire freedom from malarial fevers of all kinds. The climate is salubrious generally, but at times during the prevalence of N. and NE. winds it is relaxing, but these winds seldom prevail.

The great "Melanesian mission," of the Church of England, has its headquarters here, and is worked by a bishop, the well-known Dr. Selwyn, titular bishop of Melanesia, assisted by a numerous staff of clergymen, mechanics, etc., and has all the appliances at hand for carrying on a large establishment. The first bishop, the lamented Dr. Patterson, who it will probably be remembered was murdered at Santa Cruz some years ago, established, with the consent of the settlers, in 1866, his quarters here, purchasing from Governor Young 1,000 acres of land for the purpose. The mission has numerous stations at the many islands forming the Hebrides, Bomks, and Soloman groups. The principal object is, besides the civilizing process immediately carried on, to capture young men at savage islands and bring them, if suitable, to headquarters and educate them for teachers, much good having already, it is stated, been done in this fashion. Connected and owned by the mission authorities is a handsome auxiliary barkentine, the *Southern Cross*, which, carrying the blue ensign and the olive branch, makes three voyages a year between the headquarters and its many stations, finishing the last trip about the middle of November, when she goes on to Auckland to refit and lay up during the three hurricane months; a mid-winter trip is made to Auckland in June to recruit supplies. The station itself is quite isolated from the other community and stands in its own grounds distant some 3 miles to the NW. of the town; it may be added that the institution in the course of the year is the means of diffusing a not inconsiderable sum of money among the other settlers for boating and sundries. — NORFOLK ISLAND, April 16, 1888.

ISAAC ROBINSON,
Consul.

BAVARIAN EDUCATIONAL STATISTICS.

The following principal facts concerning education in the Kingdom of Bavaria for the years 1885-'86 are taken from the report of the bureau of statistics:

The number of German common or day schools in the Kingdom of Bavaria is 7,148, of which 309, or 4.3 per cent., are located in the cities, and 6,839, or 95.7 per cent., in the villages and the country; 7,089, or 99.2 per cent. are public, and 59, or .8 per cent., are private schools; 5,042, or 70.05 per cent., are Roman Catholic; 1,883, or 24.4 per cent., are Protestant; 213, or 2.95 per cent., are of mixed religions, and 94, or 1.3 per cent., are

boys; and in 123, or 1.7 per cent., there are certain classes for both boys and girls. The all-day schools number 6,693, or 92.4 per cent.; 463, or 6.5 per cent., are half-day schools, and in 82, or 1.1 per cent., the hours vary from all-day to half-day.

There are 22,379 teachers employed, of whom 12,531 are regular, and 9,848 are extra or special teachers. Of the regular teachers, 10,915, or 87.1 per cent., are men, and 1,616, or 12.9 per cent., are women; of the special teachers, 6,086, or 61.8 per cent., are men, and 3,762, or 38.2 per cent., are women. Male teachers are divided according to religious profession into 11,785 Catholics, 5,030 Protestants, and 195 Jews, and the female teachers into 4,742 Catholics, 626 Protestants, and 10 Jews. Of the men 42 are priests or clergymen, and of the women 848 are nuns or members of sisterhoods.

The number of pupils in attendance upon schools in Bavaria is 855,463, of whom 419,098 are boys, and 436,365 are girls; 601,803 are Catholics, 246,064 are Protestants, 7,037 are Jews, and 559 are of other religious beliefs.

The absences from school reported were for a whole day 2,472,992, and for a half day 9,176,497, and of these 334,512, or 13.5 per cent., of the whole-day absences, and 1,915,254, or 20.9 per cent., of the half-day absences occurred in the city schools, and 2,138,480, or 86.5 per cent., of the whole-day absences, and 7,261,243, or 79.1 per cent., of the half-day absences occurred in country and village schools.

Instruction was given in 7,285 buildings, which contained 12,618 rooms. From 5,662 schools, or 79.2 per cent of the whole number, 1,793,571 marks was received for tuition. The deaths among the scholars during the school year numbered 3,358, of which 464, or 13.9 per cent., occurred among students in city schools, and 2,874, or 86.1 per cent., in country schools, 1,631 being boys and 1,707 girls.

The total number of holy-day* scholars amounts to 263,923, of whom 117,845 are boys and 146,078 are girls. Of the number 190,637 are Catholics, 71,733 are Protestants, 1,406 are Jews, and 147 belong to other denominations. There were 802 day scholars and 210 holy-day scholars who were excused for various reasons from any further attendance.

The total amount received for the support of the educational institutions of Bavaria was 14,687,593 marks, and the amount expended was 13,892,601 marks, the teachers receiving 8,139,977 marks, and 5,752,624 marks being expended upon school books, buildings and grounds, etc.

There are also 244 schools in Bavaria for technical education, 198 being devoted exclusively thereto, while 46 embraced classical studies in the course. To 155 of these schools parents are obliged by law to send their children. The number of scholars in these technical schools is 26,645, with 1,300 teachers, 56 of whom are wholly devoted to technical studies. The total expense is 378,870 marks.

* Holy-day scholars are those who have attended for a certain number of days, but are still compelled to attend.

There are 597 agricultural schools, with 11,539 pupils. Of these 12 are winter schools, with 453 students, the remaining 11,086 pupils attending the other agricultural schools. The number of teachers is 956, and the expenses amount to 138,617 marks.

In the province of educational institutions intermediate between the common day schools and the university there are in Bavaria 33 institutions for the study of humane learning, with 848 teachers and 14,120 scholars. The amount expended was 2,232,910 marks, of which 256,628 was received from students.

Among other educational institutions there are 54 Latin schools, with 469 teachers and 3,107 pupils; 4 polytechnic high schools, with 60 teachers and 444 pupils; 57 polytechnic schools, with 783 teachers and 8,633 pupils; 4 industrial schools, with 59 teachers and 126 pupils; 5 schools for teaching architecture and building, with 72 teachers and 763 pupils; 8 commercial schools, with 102 teachers and 1,163 pupils; 2 schools for instruction in art industries, with 41 teachers and 218 pupils; 44 training schools for teachers, with 254 instructors and 1,896 pupils; 19 training seminaries for teachers, with 230 instructors and 1,281 pupils; 13 music schools, with 99 teachers and 1,360 pupils; 118 colleges, with 1,560 teachers and 11,022 pupils; 21 schools for teaching manual work to women, with 93 teachers and 1,713 pupils; 3 training schools for teachers in women's work schools, with 22 teachers and 66 pupils; the agricultural college at Lichtenhof, with 12 teachers and 78 pupils; 4 agricultural district schools, with 38 teachers and 166 pupils; the central agricultural college at Weiherstephon, with 15 teachers and 71 pupils; the training school for gymnastic teachers in Munich; 26 schools for teaching some particular branch of learning or science, with 60 teachers and 3,243 pupils; and 3 private institutions, with 18 teachers and 52 pupils.

The number of students at the three universities during the winter term was 5,177, of whom 2,906 were at Munich, 1,424 at Wurzburg, and 847 at Erlangen; and for the summer term there were 5,410 students, 3,060 being at the Munich University, 1,442 at Wurzburg, and 908 at Erlangen. At the seven lyceums in Bavaria there were 728 students in the winter term, and 702 during the summer term; at the polytechnic institute in Munich there were 731 students during the winter term, and 657 for the summer term; at the artists' academy there were 449 students for the winter term, and 370 for the summer term; at the forestry school at Aschoffenburg there were 92 students during the whole year, and at the veterinary college in Munich there were 122 students during the winter term, and 99 during the summer term.

Out of 766 candidates for graduation in the three universities 586 were pronounced satisfactory; in the lyceums 262 presented themselves, and all passed: at the forestry

PASSPORT REGULATIONS FOR ALSACE-LORRAINE.

I have to-day sent the following telegram:

BAYARD, *Secretary, Washington.*

From to-day foreigners entering Alsace-Lorraine from France require passports with *visá* of German embassy, Paris.

COLEMAN.

The decree upon which the foregoing telegram is based, and which is inclosed herewith in its official form, together with a translation, was promulgated by the Alsace-Lorraine authorities on the 22d ultimo, to take effect from to-day. Strenuous efforts have been made in the interval in various quarters to secure the repeal or modification of this measure, but in vain.

In calling yesterday at the foreign office to secure a copy of the official publication of the decree I was informed that it would certainly be upheld, but that the *visá* of the German embassy at Paris would be furnished at once and without question to all foreigners other than Frenchmen applying for the same, upon the payment of a fee of 10 marks. To Frenchmen the *visá* would not be given until after correspondence between the German embassy and the Alsace-Lorraine authorities.

This information, thus officially authenticated, I at once conveyed to our legation at Paris.

* * * * *

BERLIN, *June 1, 1888.*

CHAPMAN COLEMAN,
Secretary of Legation.

TRANSLATION OF THE DECREE.

[Central and District Gazette for Alsace-Lorraine.]

Upon the basis of the law of October 2, 1795 (10 Vendémiaire of the year IV), and of October 19, 1797 (28 Vendémiaire of the year VI), as well as of the ordinance of April 20, 1814, the following is hereby decreed:

I. From Thursday, May 31, 1888, all foreigners crossing the French frontier, regardless of the distinction of their journey being in the nature of a transit or for the purpose of sojourn in the country, must be in possession of a passport provided with the *visá* of the German embassy at Paris. The *visá* must not be more than a year old.

Cards showing the avocation of foreign commercial travelers (proclamation of the Imperial chancellor of October 31, 1883, Central Gazette for the German Empire, page 305) do not replace the necessary passport.

Foreigners not in possession of a regular passport are to be prevented from continuing their journey, and in case of necessity to be conducted across the frontier.

German subjects crossing the French frontier do not require a passport.

II. From the requirement of having a passport are excepted the inhabitants of the French frontier communities, in so far as they may be repairing for business purposes to a neighboring German frontier community, and satisfy the frontier police officials that such is the case.

STRASBURG, *May 22, 1888.*

TRANSLATION OF NEWSPAPER ARTICLE DISCUSSING THE DECREE.

[Norddeutsche Allgemeine Zeitung, May 29, 1888.]

An incorrect significance would be attributed to the German passport measures at the French frontier if they were regarded as reprisals on account of particular occurrences, such as those at Arricourt or at Belfort. Those and many other similar ones have no immediate significance in connection with the measures of the German Government, but have importance only indirectly as symptoms of the situation. The passport measures, like those adopted to strengthen our defensive power, have no relation to particular events, but constitute a result of our collective policy. German policy, and the administration of the Reichslande (Alsace-Lorraine) in particular, must necessarily aim to consolidate the re-acquisition of Alsace by vivifying and strengthening the relations of that country with Germany. A principal obstacle in the way of the solution of this task consists in the continuance of the social and economic relations with France which naturally existed when the re-union with Germany took place. The effect of this condition of affairs is essentially increased, and attains to international acuteness in consequence of the excitations and baitings resulting from anti-German sentiment, and the preparations for the war of revenge for the re-acquisition of Alsace by means of espionage and agitation among the inhabitants of the country through associations and all sorts of other devices. As a consequence of these incitations the hostile bearing of the French people towards us has not only remained undiminished during the last seventeen years, but has become more acute, as the occurrences at Belfort demonstrate. The hope that a French Government would ultimately find itself strong enough to oppose this course, which jeopardizes the peace of both nations, has not been verified. Even with peaceful intentions the French Government has heretofore found the means to strengthen itself in promoting rather than in soothing the national hatred. The feeling of the French population in the provinces remains continuously at a height of hatred of us which does not permit Germans to show themselves anywhere in France without danger of life and limb, and the initiative of a few gamins suffices to cause outbreaks of this dangerous feeling. Neither the reserve of German policy nor the accommodating spirit shown by it in great and small political questions has been able to produce a change in that feeling. In the wars of 1813-'15 France relatively sustained greater loss and was treated with greater violence than in that of 1870. Nevertheless, within a period of only ten years after the treaty of Paris in 1825, the French annals will be searched in vain for a trace of similar hatred on the part of France of her neighbors, of similar lust for revenge for lost battles such as those of Leipsic and Waterloo, as is manifested to-day in the columns of all French papers, and in the demeanor of the population of the provinces of France. The futility of the reserve and caution hitherto observed by Germany, with the attendant hopelessness of bringing about a change in French sentiment excites in Germany no warlike plans and feeling. We carry respect for the independence of our neighbors to the degree of complete toleration of even the most unjust hatred of us. We desire no war; *we desire only more remote relations* with France, and, as we are tied to our vicinage, we must content ourselves with becoming more reserved in our intercourse with France, and to restrict it more than heretofore on the frontier, where it is made use of to agitate the population of German Alsace. We wish that the French should be more moderate in their intercourse with Alsace, and shall feel no regret if France shall in consequence adopt measures tending in an analogous manner to restrict the visits to French territory of our German people. This course is free from enmity. We only employ permitted international means to promote the historic process of the re-Germanization of the German Imperial lands and the dissolution of their

frictions made possible and furthered by the here-

RAILROADS IN ASIA MINOR.

As supplementary to my dispatch, No. 32, relative to the proposed railroads in Asia Minor, I transmit herewith a translation of the principal conditions promulgated by the imperial administration of public works upon which concessions will be granted. These apply to the first section of the proposed trunk-road, being that between Constantinople (Scutari) and Angora, a distance of about 300 miles. The conditions are but in outline, and are intended principally as a basis for negotiation between the Government and proposed concessionists. The Government proposes to guaranty the sum of 15,000 francs gross receipts per kilometer, the required amounts being secured upon the tithes of the districts traversed by the road. — SIVAS, May 11, 1888.

H. M. JEWETT,
Consul.

[TRANSLATION.]

The concession for the construction and working of the line from Ismidt to Angora, about 480 kilometers, will be granted upon the following principal conditions:

1. The duration of the concession shall be ninety-nine years.
2. The grantees will be authorized to form a joint stock company, provided that the company shall be Ottoman, and subject to the jurisdiction of Ottoman courts in all its operations.
3. All lands called *arizii mirieihalié* (public lands) necessary for the construction of the road and its dependencies, and for grading and ballasting the same (*pour l'ouverture des carriers et ballastieres*), will be ceded gratuitously; land and property belonging to private owners to be expropriated by the grantees or the company in conformity with the law of expropriation.
4. All materials and supplies necessary for the first establishment of the line shall be exempt from the payment of customs duties, foreign and domestic.
5. The contracts for the concession and the bonds and obligations of the company shall be exempt from stamp duties.
6. For the purpose of securing the necessary sums to make up the amount of 15,000 francs gross receipts per kilometer of road built and operated, the following plan will be adopted in the farming of the tithes of the sandjaks of Ismidt, Ertogrul, Kutahia, and Angora, crossed by the line, a member of the administration of the public debt to be present at said farming of tithes, to wit: Securities are to be given by the tithe-farmers for the full value of the tithes, and are to be registered in the name of the treasuries of the administration of the public debt in the said several sandjaks. The full amount of the value of said tithes to be at once deposited in said treasuries, and the amounts which the Imperial Government promises and engages itself to pay to make up the amount of gross annual receipts, as above indicated, to be levied on the said value of the tithes, the balance to be remitted to the treasury.
7. The line now in operation between Haidar-Pacha and Ismidt (95 kilometers), of which the actual receipts are about 10,000 francs, and the works already constructed beyond Ismidt, shall be ceded to the company upon payment of an adequate amount.

TECHNICAL CONDITIONS.

The line shall have a gauge of 1.44 to 1.45 meters. In the

Should, however, on making the surveys, some exceptional difficulties be discovered, such modifications of the above technical conditions will be allowed as will not be incompatible with the regular working of the line at the minimum rate of 35 kilometers per hour, including stops.

All matters of detail, aside from the above principal and technical conditions, set forth in the printed specifications and conditions of contract, may be modified by mutual agreement, with due regard to the exigencies of the case.

TRADE IN THE STRAITS SETTLEMENTS.

The following table gives the values of the imports and exports at the three settlements in 1886 and 1887 respectively:

Settlements.	Imports.		Exports.	
	1886.	1887.	1886.	1887.
Singapore	\$77,277,536	\$92,119,736	\$60,578,615	\$75,066,330
Penang.....	41,194,292	46,369,873	40,212,507	42,289,573
Malacca.....	3,072,390	3,833,311	3,331,152	3,985,308
Total.....	121,544,218	142,322,920	104,122,274	121,341,211

It must be remembered that these trade returns are approximate only, as there is no custom-house in the colony.

The very large increase in the value of the imports and exports, amounting in the aggregate to \$37,997,639, can not be attributed altogether to augmented trade, but is partly due to the improved system of obtaining returns of imports and exports introduced in June, 1886, under the provisions of Ordinance I of that year.

The entire value of the imports into Singapore shows an increase of over \$14,000,000. The imports from the United Kingdom alone exhibit an increase of nearly \$3,500,000, and the imports from British colonies show a similar increase, principally from Hong-Kong and British India. The value of the imports from the other settlements increased over \$500,000. The imports from foreign countries give the large increase in value of almost \$7,500,000, the countries that contribute most being, in their order, Japan, Netherlands India, Johor, the protected native states, and Java.

The exports from Singapore show the large increase in value of \$14,500,000. In the exports to the United Kingdom there is an increase of over \$5,000,000; in those to British colonies there is a decrease of about \$1,728,000, chiefly in the exports to Hong-Kong and British Burmah; to foreign countries the exports exhibit an increase in value of over \$6,750,000, chiefly to Siam, Netherlands India, the United States, and Germany. The exports to the other settlements give an increase of almost \$800,000.

The export of tin shows a large increase. The market has been extraordinarily buoyant, and the export of tin is greater than in 1886 by the sum of \$8,250,000.

showing under

CAMPHOR MONOPOLY IN FORMOSA.

I had the honor to report in my dispatch, No. 592, of March 19, that measures for the abolition of the camphor monopoly in Formosa were in satisfactory train. Subsequently the Tung-li Yamēn repudiated the construction placed on its alleged agreement by the foreign ministers. The Yamēn now insists that the monopoly in camphor shall remain in force as at present. By reference to dispatch No. 39, of June 15, 1869, of Mr. T. Ross Browne to the Secretary of State, and inclosure B therein you will see that certain rules governing the camphor trade were adopted March 17, 1869. Those rules were in the nature of an agreement between the Chinese Government and the foreign powers. Under the circumstances the foreign ministers have transmitted to the Yamēn a communication, of which a copy is appended to my dispatch No. 633, of April 27, 1888. The ministers therein insist that these rules are still in force, and inform the Yamēn that the consuls have been instructed to claim compensation for all injuries arising from any breach thereof.—PEKING, *April 27, 1888.*

CHARLES DENBY.

COST OF MANUFACTURING ALL-WOOL DRESS GOODS.

Few lines of manufacture are so complicated as woolens. We have all-wool goods and mixed goods; goods of cotton warp and all-wool weft; cotton warp, shoddy, and wool weft; goods of shoddy and wool, without cotton; goods made almost entirely of what the poor people aptly call "devil's dust," with just a scratching of wool to hold the shoddy from flying away, but passing under the pretentious name of woolens; all-wool goods, with cotton carded in the wool; heavy-weight and light-weight goods; goods with a labor-cost of three times the value of the wool, and goods where less than one-third of the value of the wool represents the labor-cost. Besides all these variations we have worsteds, which, although classed separately, are composed of the same raw material, but form a different class under which manufactured wool appears in the market. Comparisons on a broad line, under a general heading, as in our census under "woolens" or "worsted," are therefore impossible, unless we could be sure that foreign census reports contained the same itemized columns and the classifications contained quantitatively and qualitatively the same goods and in like proportions—in itself an impossibility. The only method, then, would be to select special articles of wide and general use, manufactured in different countries from the same class of raw material, and base an inquiry thereon. This plan I have followed in this inquiry, and have selected as the first of a number of articles of wool manufactures all-wool dress goods on which to obtain the comparative cost of production. It would have been better to have obtained the cost and manufacturing conditions in Germany and France as well as in America.

production in this line can, however, be supplemented later on. A comparison with a country whose working methods come the nearest to ours among European nations can not fail to be of interest. The class of goods referred to are known as

SACKINGS.

In America they are largely used for ladies' dress. They are made of carded wool, and are of plain flannel weave. They represent therefore flannel manufacturing in the different items of labor as well as sackings or ladies' cloth.

A. — The American goods.

The American mill, from which my samples are obtained, manufactures this class of goods exclusively, though in two or three qualities: All-wool sackings, on which my comparison, the subject of this report, is based, and a similar article called tricot (a tricot weave), with some cotton carded in. The cotton carded in is dyed when bought. All other dyeing and labor processes are done at the mill. Some of the yarn is also received from outside sources.

The proportion in which bought yarn stands to goods woven in the mill, and other information referring to the material, can be inferred from this extract from the mill account for the half-year: 163,614 pounds woven, 131,251 pounds carded, and 138,105 pounds spun. The mill runs 10 sets of woolen machinery, 3 cards to a set, 40 inches wide, "Bramwell automatic feeder," 40 strands of roving to each card; 3,720 spindles and 76 broad looms, 110 inches wide, two-yard wide weaving on each loom; so that on the narrower goods two widths are woven on one loom, which are then split. On plain work one weaver runs two looms, while on the fancy goods (tricots) only one loom is tended by one weaver. The looms run 75 picks to the minute.

1. *The wool.* — The mill uses mostly Ohio and Michigan X fleece, the prices of which stood in December last, the time of my visit, 35 cents. A shrinkage of 50 per cent. takes place from the wool in the scouring and manufacturing, which brings the cost of the wool in the cloth up to 70 cents a pound. In the six months from December 6, 1886, to May 28, 1887, for which my account runs, this mill scoured for carding 131,251 pounds.

2. *The carding.* — The preparatory work up to and including carding, which embraces scouring, required an outlay of \$3,882, or 2.95 cents per pound of carded wool. This includes the expense of necessary supplies. In October of last year 20,894 pounds were carded at a cost of \$287 for supplies in the preparatory processes, and \$407 for labor, making a total of \$694. The supplies, however, were too high, compared with other months, and a residue of \$50 had to be deducted to reduce it to the general average of, say, \$237 for labor, equal to

are paid, as in scouring and carding, the number of hands employed can not be changed to suit the changing quantities under operation; hence one week's labor-cost per unit, except where piece rates prevail, is never absolutely the same as another.

3. *The spinning.*—The spinning employs one overseer at \$2.50 per day; six men at \$1.75 each; six boys at \$1 each; and to this must be added six girl spoolers at 75 cents each; making a total of \$23.50 per day, or \$141 per week.

In the month referred to 23,864 pounds were spun, at an outlay of \$647 (\$10 of which went for supplies only), or 2.70 cents per pound as the cost of spinning. In the half-year mentioned 138,105 pounds were spun at a cost of \$3,932, or 2.85 cents per pound—for practical purposes, no material difference, though showing the variations already spoken of in the carding.

4. *The weaving.*—The dressing department employs four men, who average \$1.80 per day, and the warping employs three young men at \$1.45; making a total of \$11.55 per day, equal to \$69.30 per week, and for twenty-five weeks \$1,732.50. In the half-year 163,614 pounds were woven, equal to 396,585 square yards, which is 1.06 cents per pound and 0.44 cent per square yard.

The weaving expense of this half-yearly product was \$16,151, including the above preparatory process, and burling and mending. The latter employs six girls, who average \$1 per day, or \$6 per week; being equal to \$900 for the half year. Besides these, four loom-fixers are employed at \$1.75 per day, \$42 per week, and \$1,050 for the half year; one overseer at \$78 per month, or \$468 for the half year; completing the additional labor at \$2,418; equal to 1.47 cents per pound, and 0.60 cent per square yard.

The total weaving wages paid for the period of six months under review were, as stated, \$16,151 for the 163,614 pounds of miscellaneous dress goods, or 9.85 cents per pound, inclusive of all expense incidental to weaving.

In the month of October last 26,607 pounds were woven at an outlay of \$2,750 for wages, including overseers, and \$225 for supplies, which is 10.34 cents per pound for wages, and 0.84 cent per pound for supplies; making a total of 11.18 cents.

These differences in the two statements are due, as can be easily conjectured, to the different goods woven, where the greater or smaller quantity of the more or less expensive weaving done in one period, as against another, certainly gives a relatively different monthly account. The tricot goods, 36 inches in width, weigh 4.2 ounces, and are paid at the rate of \$4 per cut of about 68 yards, average. Of these, two pieces are woven on one loom—one of 36 inches and one of 48 inches wide; consequently the 36 inches, or the square yard, stands at \$1.72 per cut, or 2.53 cents per yard.

The sackings, or dress goods, the subject of this comparison, are 50 inches wide and weigh 6.1 ounces, which is equal to 4.4 ounces per yard. In these goods

ning the same 50-inch goods, at the rate of \$1.80 per cut, or 2.65 cents per running yard, equal to 1.91 cents per square yard. Tricot is therefore paid at the rate of 2.53 cents and the sacking at the rate of 1.91 cents on the square yard. Per pound, one stands at 9.64 and the other at 6.90 cents. A third quality, woven of the same plain weave as the sackings, but with a cotton warp, is 22 inches wide, and is run four widths on one loom. These four widths are also paid at the rate of \$1.80 per cut of like length. If anything, these are somewhat heavier than the plain goods, as cotton is of greater specific weight than wool. But taking only the same ratio this gives per yard of 22 inches 0.66 cents, per square yard, 1.084 cents, and 3.93 cents per pound as the direct weaver's wages. To recapitulate:

	Per square yard.	Per pound.
Tricots.....	2.53	9.64
All-wool sackings.....	1.91	6.90
Twenty-two-inch cotton-warp dress goods.....	1.084	3.93

To this must be added a general charge of 0.85 cents per pound for supplies and materials, mostly in dressing, to complete the cost of weaving. Thus there are variations of nearly 150 per cent. in the square yard and pound, although in the mill account, where the product is aggregated in square yards and pounds, one average price would appear to cover all qualities alike—a necessary result, showing the fallacy of general averaging so freely indulged in in our statistics. The weaver in these latter goods turns also two looms. The average output in sackings is about 50 square yards a day per loom. The 50-inch sackings give 25 yards per loom, or 50 yards per two looms, or 300 yards per week, at the rate of 2.65 cents per yard, or \$7.95 as weekly earnings for good average weavers.

5. *The dyeing.*—The dyeing, of course, is all piece dyeing. The 163,614 pounds of woven goods cost \$3,098 for dyeing, including dye-stuffs, or 1.9 cents per pound. The wages account covers one head dyer at \$3, and four men at \$1.40 a day, in all \$8.60, or per week \$51.60. This is, per half-year of twenty-five weeks, \$1,290, leaving \$1,800 for dye-stuffs and other necessary supplies. Divided, the pound of dyed stuff stands, for labor, 0.8 cents; for dye-stuffs, etc., 1.1 cents; total, 1.9 cents.

The monthly account for October gives, wages for dyeing the 26,607 woven pounds, \$202, and for supplies, \$112. The previous month, while about the same wages were paid, \$631 were paid for supplies and dye-stuffs. An average, of course, must be drawn, as supplies, dye-stuffs, etc., are not bought from hand to mouth to cover the exact requirements for the work under process. This average would give the same proportions as in the half-

at an average of \$1.35 a day, or \$8 a week, which gives \$144 per week, and per half-year, \$3,600 in wages. The actual account of the half-year gives \$4,263 as finishing expense, which cover materials and supplies. The pound, therefore, costs an additional 2.6 cents for finishing.

7. *Additional charges.*—These we may classify under one collective heading. The mill charges the same on the yard or pound at least, and consequently this is for this inquiry the only basis which concerns us. The items are :

Expense in wool handling.....	\$836
General expense, office, etc.....	10,106
Rent.....	2,884
Insurance.....	352
Taxes.....	1,009
Interest.....	3,461
Total.....	18,648

Per pound this represents 11.4 cents, per square yard 3.135 cents, and per 50-inch goods per yard 4.355 cents.

8. *Total cost.*—The total cost in Massachusetts per manufactured pound of goods as described, *i. e.*, all-wool sackings used for ladies' dress goods, is as follows :

	Cents.
1. Wool.....	70
2. Carding, including scouring.....	3.09
3. Spinning.....	2.85
4. Weaving, labor	
<i>a.</i> Dressing and warping.....	1.06
<i>b.</i> Weaving.....	6.90
<i>c.</i> Burling and mending, loom fixers and overseers' pay.....	1.66
5. Supplies.....	.85
6. Dyeing.....	1.9
7. Finishing.....	2.6
8. Additional charges.....	11.4
Total cost per pound.....	102.31

The proprietor of the mill gave, in a general statement, the principal leading features underlying the working operations and the details of cost : The general average cost of manufacturing the goods which the mill produced outside of wool, but covering everything else, was 33 cents per pound. He had to leave then on other and pressing business, but gave me all the mill books to scrutinize, besides directing the book-keeper to assist me in every way possible and to give me every account and account-book which I might require to put me in possession of every detail. The computations in the above headings are from the extracts I have made of the account-books, and show how closely they correspond in the aggregate with the general cost statement given in the outset. The difference of

counted in the general statement, but which I omitted to take cognizance of, on account of the goods under comparison being all-wool goods. I make mention of this fact more to duly and gratefully acknowledge the large-minded liberality with which the manufacturers met my request, when personally applying for such minute and intimate information on what would seem the most private details of business and cost account.

B. — The English goods.

There are no concerns in England who would run their mills year in and year out, or a very large part of their looms even, on one class of goods like those we have in comparison here. After much inquiry, I found a mill which was doing quite a business in this line of goods. The mill works two departments, a worsted mill and a carded-wool mill. The mill runs eleven sets of cards. The cards are of the best and most improved pattern; the so-called Scotch cards, preparer, scribbler, and condenser. The condenser is divided into fifty-nine threads. Each set cost £600, but eleven people do the work now for which eighty were required in the old days before these automatic improvements were introduced. The card automatically weighs its own wool and registers the weight on a sort of clock-work attached to the card.

1. *The wool.* — The clothing mill used in one week the following wools: 12,500 pounds of grease wool, greasy Sydney wool, at 8*d.*, which loses 9 out of 16 pounds and yields 5,500 pounds of clean wool; and 6,000 pounds of washed Port Phillip, which costs 12*d.* to 13*d.* a pound and yields 4,687 pounds, total, 10,187 pounds of clean wool. The goods made by this mill are of a somewhat finer class and have a better face and higher finish than my sample of American goods. No labor items, however, constituting cost, are affected thereby, as the count of picks and number of yarn is the same — at most a difference in the wool and in the ultimate finishing expense. The goods under review are made of Cape or Sydney wool, for which they paid 6½*d.*, or 13 cents, per pound. This wool shrinks 50 per cent. in scouring, with an additional loss in manufacturing, and yields 6½ pounds of cloth to 16 pounds of grease wool. The wool would then stand 16*d.*, or 32 cents, per pound in the cloth.

2 and 3. *Carding and spinning.* — The above wool makes 8,500 pounds of yarn. The labor of the preparing part, consisting of sorting, packing, scouring, dyeing, carbonizing, washing off, dyeing again, willeying, mixing, oiling, and packing, which all precedes the carding and spinning, is included with the total spinning cost, and can not well be itemized. The 11-1000 cost including scouring, milling, fulling, carding, and spinning, The supplies, etc.,

others form the additional staff. The labor expense for these auxiliaries in weaving per piece of 36 yards is taken as 10*d.* for this class of goods, or 0.28*d.*, or 0.56 cents, per yard—per pound 1.33 cents.

In weaving each operator, as said before, operates one loom only against two in America in this class of goods. The weekly average output of 6-4 sackings (6 $\frac{3}{4}$ ounces to the yard) is 105 yards. The rate of pay for weaving is 7*s.* 8*d.* per piece of 72 yards = 1.28*d.*, or 2.56 cents per yard, or 6.07 cents per pound.

The weaving wages per pound of finished cloth are nearly the same as in America. The running yard shows more difference. The American goods, of which are my samples, are 50 inches wide; the English are 54 inches wide. The 54-inch goods are, however, also largely manufactured in America, but are as a rule about an ounce heavier per 54-inch yard than this class. The English wages of a weaver in woolen mills, mostly girls, are from 12*s.* to 15*s.* a week—not one-half the American pay. That weaving cost to the manufacturer is the same is due to the greater working power and quickness of the American operatives who, no matter what their original nationality may be, soon learn to take up the quickness and sprightliness of their better-trained American associates. I have often been told by English manufacturers, when speaking of this phenomenon of small output, larger numbers of hands and similar disproportions in the two respective working worlds, that they knew it well. They say, and my informant in this line among the rest, that an English girl is satisfied if she earns her 12*s.*, or, if she is clever, 15*s.* a week, and does not exert herself to go beyond that. I have found, however, exceptions to the rule, and we find in England variations of an almost unlimited number from the most progressive to the most stagnating method.

5. *The dyeing.*—The dyeing is not done in the mill, but is given out to a dyeing establishment. The dyeing is charged by the piece without close regard to the number of yards contained in it. I find it generally much dearer than in woolen manufacturing in America.

But repeated inquiry corroborates the statement of my informant. Upon my request for going over the charge again he answered, "The price I have quoted for dyeing is under the mark, and not too high, as you seem to think." The cost per yard of 54-inch wide of these goods in assorted colors is 2*d.*, or 4 cents; per pound this would be over 9 cents, but we will set it down as 8 cents.

6. *The finishing.*—The finishing expense is 1*d.* or 2 cents a yard, or 4 cents per pound. The goods have a higher and better finish than the American goods, which have a dull and rough appearance. The English excel in beauty of finish. The goods have a glossy, brilliant look, which gives them a higher value though at an unappreciably higher cost.

7. *Manufacturing charges.*—The same charges as

To summarize, then, we have per pound of manufactured 6-4 dress-goods in England at $6\frac{3}{4}$ oz. :

	Cents.
The wool	32
Carding, including preparing the wool, scouring, and spinning.....	4
Supplies.....	$1\frac{1}{2}$
	5.50
Weaving:	
<i>a.</i> and <i>c.</i> dressing, etc.....	1.33
<i>b.</i> weaving.....	6.07
	7.40
Dyeing.....	8
Finishing.....	4
Charges.....	13
	37.90
Total.....	69.90

or in English money 34.95*d.* per^e pound. The yard at $6\frac{3}{4}$ oz. then costs 14.76*d.*, or 29.52 cents. The goods are sold at 1*s.* 6*d.*, or 36 cents a yard. Off this price a discount for cash of $2\frac{1}{2}$ per cent., an extra yard in the piece and 1 inch of each yard is given (37 inches instead of 36) in Yorkshire (one meets with rather queer trade customs and trade regulations, the traditional development, so to speak, of the customs of the people, and hard to follow to their sources), in all about $7\frac{1}{2}$ per cent. has to come off, leaving 33.30 cents—3.78 cents profit.

C. — Another English account.

To corroborate the items of B account I obtained another statement from another mill in Leeds. The goods are of the same make, but somewhat finer and a trifle heavier.

They use New South Wales greasy lambs pieces and locks of which the present price is $5\frac{1}{2}$ *d.* or 11 cents per pound. This wool in scouring yields $33\frac{1}{3}$ per cent., and 72 pounds are required for producing a piece of 54-inch sackings of 42 yards length and weighing 7 ounces to the yard, or $18\frac{3}{8}$ pounds of cloth in all; a shrinkage of nearly 75 per cent.

Cost per piece of $18\frac{3}{8}$ pounds:

	£	s.	d.		Per pound.
1. Wool, 72 pounds at $5\frac{1}{2}$ <i>d.</i>	1	13	0	\$8.01	43.6
2 and 3. Labor up to weaving.....		3	4	.80	4.35
Supplies, machinery, coal, etc		9	10	2.36	12.8
4. Weaving, labor.....		7	0	1.68	9.15
Weaving machinery.....		5	0	1.20	6.5
Milling and other sundries			10	.20	1.01
Labor sundries		4	0	.096	5.2
5. Dyeing		8	6	2.04	11.1
6. Finishing (60 per cent. labor).....		6	0	1.44	7.16
					57.27

The manufacturer has calculated here the supplies, those counted separately in A and B exhibit and all charges contained in No. 7 in A and B, in with each separate manufacturing process, *i. e.* (1) up to weaving and (2) the woven goods, etc.; likewise the interest and discount in with the general charges. Let us see now how this compares with B account. Taking $7\frac{1}{2}$ per cent. off leaves 93.80 cents, and if we allow $10\frac{1}{2}$ per cent. profit as in B, gives 83.85 cents. Now, the wool costs 43.60; consequently 40.25 cents covers the manufacturers cost against 37.90 cents in statement B and 33 cents in America. I have only introduced this account C for corroboration of B. The labor cost is very little higher than of the other English goods; so are the finishing and dyeing expense. The account of B I have examined personally and obtained the items in more specified form. The account of C was mailed to me after I had left Leeds, and the close approximation of two accounts from different parties, unknown to each other as giving me the information, certainly is very valuable confirmation of general correctness. Mathematical accuracy can only be obtained where, as in America, one mill makes one class of goods only, and then only with mental reservations, as (see the weaving statement in Exhibit A) even here different kinds of goods, though of the same class, are turned out in the year's run. But if we come within a fraction of a cent for each manufacturing operation in all-wool dress goods to reliable information of comparative values, we have covered all that can be reasonably expected for the purpose of this inquiry.

To recapitulate, the net cost of manufacture in Massachusetts and Leeds would be as follows:

Elements of cost.	Massachusetts.			Leeds.		
	Labor.	Incidental supplies.	Total.	Labor.	Incidental supplies.	Total.
	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.
Wool in 1 pound of goods, as described.....			70			32
Scouring, carding, and spinning.....	4.80	1.14	5.90	4	1.50	5.50
Weaving, etc.....	9.62	.85	10.47	7.40		7.40
Dyeing.....	.8	1.1	1.9			8
Fulling, finishing, etc.....	2.6		2.6			4
Charges, etc.....			11.4			13
Total.....			102.31			69.90

The manufacturing cost is 33 cents in America, against 38 cents in England, 5 cents less in America; but the wool costs 38 cents more in America, in part on account of the wool duties. In other words, if we had the wool at the same cost of the English, we could produce at 64.31 cents what it costs in England 69.90 cents to produce. Our wools, of course, sell at as much higher rates over foreign wools than the duty and charges amount to. The cheaper the foreign wools the greater the disproportion between our price and the foreign wool price. The wools used in England—cheap colonial clothing wool.

a luster and life which ours seldom show. Most of them are even of smaller shrinkage than ours of corresponding nature.* Some of them, however, as the wools used by the manufacture C, are absolutely prohibited. There the wool costs 11 cents in the grease, but the manufacturer importing the wool has to pay a fine at the custom-house of 10 cents, not alone for the wool he uses, but 10 cents for each pound of grease and dirt, which he has to import along with the wool, and is lost in the scouring; consequently 4 pounds of wool, as in Exhibit C, are required to produce 1 pound of cloth 4x10, or 40 cents on 43.6 cents worth of wool. (A wool of this sort would cost the American manufacturer fully $11\frac{1}{2}$ cents more per pound of greasy wool, as not alone the duty, but also the extra freight and charges, brokerage commissions, etc., have to be counted; so that the 44 cents in the 4 pounds required for a pound of cloth would cost him 90 cents, or 105 per cent., more than the English manufacturer has to pay.) Our custom-house statistics only show the rates paid on what is imported, and never on what is excluded by prohibitive duties. The excluded materials are those which make the success or failure of manufacturing. The excluded materials, on the contrary, however, always find a way into the United States in the form of manufactured goods.

Items 2, 3, and 4 in the comparison need no further explanation. Sufficient has been said in the separate parts. The dyeing is done in America in most mills by the manufacturers; in England, by separate dye-houses. In America large quantities of similar goods, and frequently of one color, are dyed in a day's work; in England large and small quantities of dissimilar goods are sent to the dye-house from a large number of firms. A large woolen mill in Massachusetts, dyeing in the wool only, gave me as the daily average quantity of indigo-blue dyeing, 6,500 to 7,000 pounds of wool. For this they employ from forty-five to fifty men at \$1.15 a day. Taking fifty, the larger number, they would pay \$57.50, and with the head dyer say, in round numbers, \$60 a day. These men, however, do the scouring likewise of the same quantity of wool. The dyeing and scouring therefore costs in labor only six-sevenths of a cent per pound. The mill is known for paying smaller wages than is general. On the other hand, this statement shows how much saving can be effected when operations are conducted on so large a scale as in this mill and with no changes in the dye, etc.

Whatever the causes, whatever the advantages or disadvantages in regard to the ultimate result in the character, quality, or appearance of the goods, one thing is certain, that so far as the cheapening of price is concerned our manufacturing system seems to have the honors. I only allude to this phase now inferentially. I reserve to myself the task, in summing up the results of my inquiries into the manufacturing cost and working methods of different nations, to return to and more fully treat this very important subject in a separate report the facts. —

RUSSIAN GRAIN IN GERMANY.

At a time when measures are being discussed for putting difficulties in the way of Russian wheat and other grain it may be of interest to know how large the interests are which are involved.

Owing to a good harvest and the completion of many important lines of Russian railroad the export from the Russian Empire for the year 1887 shows considerable increase. The principal part of the increase over the preceding year is set down to the time immediately succeeding the advance of import duties. Of Russian grain Germany imported:

Year.	Wheat.	Rye.	Barley.	Oats.
	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>
1887.....	250,986.4	416,164.1	75,932.5	121,144.4
1886.....	141,687.7	827,961.5	44,661.7	40,258.6
Increase in 1887.....	109,293.7	88,202.6	31,320.8	80,885.8

NOTE. — A ton, as above used, equals 2,204.62 pounds.

The total export from Russia, according to Russian figures, was:

Year.	Wheat.	Rye.	Barley.	Oats.
	<i>Pood.</i>	<i>Pood.</i>	<i>Pood.</i>	<i>Pood.</i>
1887.....	130,619	77,553	58,541	61,016
1886.....	86,656	65,656	41,258	34,151
Increase in 1887.....	43,963	12,530	17,283	26,365

NOTE. — A pood equals 36.1139 pounds.

Reduced to percentages, 11.73 per cent. of the wheat, 32.76 per cent. of the rye, 7.92 per cent. of the barley, and 12.12 per cent. of the oats exported from Russia were imported into Germany. Looked at as percentages they all, with the exception of rye, seem very small. A flooding of Germany with Russian grain is hardly probable, the more so when we think of last year's increase of duties. Grain centers are taking alarm at the threat to put an increase of 50 per cent. on all Russian grain imports.

During 1887 Mannheim imported:

Cereals.	Quantities.	Duties.
	<i>Kilograms.</i>	<i>Marks.</i>
Wheat.....	178,559,196	5,356,775.85
Rye.....	24,219,653	726,589.55
Barley.....	146,679,905	2,200,198.55
Oats.....	11,064,213	.....
Maize.....	.....	.....

Movement of grain by river and rail in Mannheim for five years ending December 31, 1887.

Year.	By boat.		By train.		Total.
	Came.	Went.	Came.	Went.	
<i>Wheat.</i>					
1887.....	2,270,437	414	28,540	1,921,050	4,220,441
1886.....	2,158,158	2,467	40,920	1,808,980	4,010,825
1885.....	1,787,573	9,884	69,040	1,864,140	3,730,637
1884.....	2,779,153	12,730	111,540	2,724,220	5,627,643
1883.....	2,253,942	20,999	52,200	1,906,920	4,234,061
<i>Rye.</i>					
1887.....	295,002	3,728	3,350	222,180	524,260
1886.....	188,730	6,011	2,830	119,050	316,621
1885.....	220,550	642	4,280	128,450	353,922
1884.....	88,233	1,158	4,620	84,080	178,091
1883.....	74,811	3,349	1,920	57,160	137,240
<i>Barley.</i>					
1887.....	75,397	42,440	43,130	73,660	233,627
1886.....	51,286	27,621	55,290	25,200	259,367
1885.....	29,104	22,132	44,290	29,800	125,326
1884.....	14,643	26,376	46,480	16,780	104,279
1883.....	11,333	71,262	88,580	12,040	483,215
<i>Oats.</i>					
1887.....	158,329	1,110	24,070	121,830	305,339
1886.....	28,212	28,425	37,560	9,299	103,487
1885.....	29,389	2,155	36,600	24,550	92,694
1884.....	18,228	700	23,780	22,050	64,758
1883.....	3,034	5,039	41,960	20,720	70,753
<i>Maize.</i>					
1887.....	268,821	5,080	.....	.....	273,901
1886.....	220,029	6,581	.....	.....	226,610
1885.....	195,492	1,405	.....	.....	196,897
1884.....	120,502	1,287	.....	.....	121,789
1883.....	115,679	394	.....	.....	116,073

The above figures are so many meter centners, or 220 pounds. —MANNHEIM, May 27, 1888.

J. C. MONAGHAN,
Consul.

PETROLEUM IN EGYPT.

The Egyptian petroleum explorations on the Red Sea coast were some time ago suspended. The Government spent in the neighborhood of \$750,000 in these explorations, and has nothing to show in return for this very considerable outlay except worn machinery and a few empty holes in the rock at Zeite and Djemseh. The first effort to find petroleum was made in the latter

" / Zeite A little oil was then found,

knew nothing about searching for petroleum. He had no familiarity with petroleum regions, but his report convinced the uninitiated Egyptian officials that the whole earth thereabouts, including the long mountain line between the Red Sea and the Nile valley, contained inexhaustible stores of petroleum. It was found in even the paving rock of Cairo, taken from the hills overhanging the city. The imaginative explorer found the smell of oil everywhere, and the wildest desire possessed the Egyptian official mind to profit at the earliest day from the vast store of wealth with which a wide region of Egypt was saturated. Expert borers were employed and great quantities of machinery were purchased, and under a great strain the works were erected and the boring was begun in the latter part of 1886. Watching closely the progress of investigation and operation, I was never led to believe there would be any outcome from Egyptian petroleum works, and I so reported to the Department of State, giving in detail, however, all movements and developments in the process of exploration, discovery, and operation. As already stated, the Egyptian petroleum explorations and works are at an end, because no oil could be found to keep them going. Expensive machinery now lies idle in the humid air of the Red Sea coast, where in disuse it will soon become worthless. It can be used for no other purpose. — CAIRO, EGYPT, *May 29, 1888.*

JOHN CARDWELL,
Agent and Consul-General.

EMIGRATION FROM NORWAY IN 1887.

The Norwegian statistical bureau has published official statistics of the aggregate emigration from this country in 1887, from which I copy the following details:

Sex of the emigrants.

Where from.	Men.	Women.	Total.
From Norway rural districts.....	7,880	4,555	12,435
From Norway towns.....	4,834	3,472	8,306
Total from Norway in 1887.....	12,714	8,027	20,741
Whole number from Norway in —			
1886.....	8,611	6,547	15,158
1885.....	7,272	6,709	13,981
1884.....	8,044	6,732	14,776
1883.....	12,358	9,800	22,158
1882.....			

Ages of the emigrants.

Where from.	Under 15.	15-30.	30-65.	Over 65.	Unknown.
From Norway rural districts.....	2,038	7,880	2,414	100	3
From Norway towns.....	1,595	4,440	2,206	59	6
Total from Norway in 1887.....	3,633	12,320	4,620	159	9
Whole number from Norway in —					
1886.....	3,107	8,462	3,434	146	9
1885.....	3,477	7,296	3,089	117	2
1884.....	3,618	7,736	3,282	133	7
1883.....	5,798	11,019	5,169	176	5
1882.....	7,182	14,341	7,070	202	9
1881.....	6,637	12,716	6,412	201	10

Nationality of emigrants from Norway.

Year.	Norwegian.	Swedes.	Others.	Total.
1887.....	20,741	4,845	136	25,722
1886.....	15,158	2,103	63	17,324
1885.....	13,981	1,215	31	15,227
1884.....	14,776	1,356	53	16,185
1883.....	22,167	2,126	154	24,447
1882.....	28,804	3,910	176	32,891
1861.....	25,976	2,647	96	28,719

Emigration from different Norwegian ports from 1881 to 1887.

Port.	1881.	1882.	1883.	1884.	1885.	1886.	1887.
Christiania.....	15,944	18,452	14,275	9,429	8,560	9,416	14,129
Christiansand.....	1,182	1,711	1,360	1,101	1,006	1,701	2,933
Stavanger.....	1,901	2,229	1,751	1,204	1,512	1,656	2,147
Bergen.....	2,940	3,017	2,488	1,828	1,770	1,816	1,725
Drontheim.....	5,968	6,652	4,081	2,244	1,903	2,083	3,375
Other ports.....	785	830	492	379	476	652	1,413

From the above figures it will be seen that the number of emigrants increased considerably in 1887, especially male emigrants, the number being 12,714, against 8,611 in 1886. The number of emigrants in their strongest period of life, viz, from fifteen to thirty years, also shows a large increase, being 12,320, against 8,462 in 1886. It is noticeable that Swedish emigrants are shipping in increasing numbers from Norwegian ports, the number being 4,845 in 1887, against 2,103 in 1886.

The emigration to the United States has up to this date been exceedingly large, and will show a much higher figure than in 1887. Here, as well as in Sweden, the country is incessantly drained of workmen in all branches and more difficult to

EFFORTS TO INCREASE DUTCH FOREIGN TRADE.

I transmit herewith a translated copy of a circular issued by a committee composed of a large number of the most prominent merchants, manufacturers, and others at Amsterdam, Rotterdam, and other places in this country, and which said committee has formed an association named "The Foreign Country" (Het Buitenland).

What caused the action of the organizers of this association, its aims and purposes, and what is desired and expected to be achieved by and from the establishment and of the institution, is all clearly set forth in the inclosure herewith, wherefore I dispense with explaining or describing it in this dispatch.

The high character and great influence of the parties who initiate and stand at the head of the movement give great promise that the association will receive a goodly amount of general support, and that it will be exceedingly apt to prove successful and a benefit to the country.

I invite your attention to the contents of the inclosed circular, as they relate to a matter which, in my opinion, is not only novel and interesting, but which may, perhaps, deserve to be regarded as of some importance, inasmuch as following the example by the formation of similar associations in the United States may be found to be paramountly desirable and commendable, and, therefore, it may be superfluous that I remark or suggest that the information conveyed by the above and in the accompanying circular be in some form brought to the notice of our own public. — AMSTERDAM, *June 7, 1888.*

D. ECKSTEIN,
Consul.

AMSTERDAM, }
ROTTERDAM, } *May, 1888.*

GENTLEMEN: Every day the necessity becomes more apparent for our country to make earnest endeavors towards sustaining or renewing the struggle against the keen competition from abroad in commercial matters in all those countries which are likely to be closed to us in a short time; and above all towards an extension of our traffic to those great emporiums of commerce in India, China, and other extra European countries where Dutch commerce and industry were scarcely represented till now. Where our neighbors seek and find fresh fields of action we can not remain behind if we will not suffer ourselves to be gradually shut out from international traffic altogether.

There is ample proof that the productions of our home industry are at least equal to those of other countries, and that to be assured of a ready sale they require only to be made known in a judicious manner.

The transatlantic trade of the Netherlands remains limited chiefly to our own colonies, and is growing into rather a transit than an import and export trade, which is of little advantage to our national industry.

This one-sidedness of our commercial

with the mother country. By this means trade and navigation with the English and Germans are constantly stimulated and their industry kept informed by countrymen about the wants and requirements of other nations, and obtains fresh opportunities for the sale of its productions.

Dutch commercial houses abroad are few in number, and though many young Dutchmen are willing to establish themselves abroad, they miss the opportunity to obtain there in a subaltern position at first the necessary experience, because they do not find everywhere, like the Englishman and German, commercial houses where they are sure to find employment.

We therefore deem it highly desirable for the trade and industry of our country that young Dutchmen should go abroad on a more extensive scale than hitherto, not only with a view to augmenting their knowledge of commercial and industrial matters, but also to get acquainted with the mode of transacting business in various places, with the customers in the East, with the bazars; in short, to feel themselves at home in foreign parts, not only in business but also in ordinary life, so that in a few years hence the possibility is opened and even the way cleared for them to establish Dutch commercial houses in the principal international markets, where there are none now. Once in possession of the necessary capacities, together with professional and local knowledge, finding an opportunity of establishing business on their own account, or being taken into partnership by existing firms, the prosperity of Dutch commerce will be greatly promoted.

To that effect the undersigned have created an association — "The Foreign Country" (Het Bintenland) — which has obtained the royal sanction to its articles of agreement and which intends to procure through personal influence of the members and by the influence of our consuls appointments with commercial counting-houses in transatlantic places for such young men as it shall recommend.

In the beginning it will probably be necessary to support these young men financially:

1. By the payment of the whole or part of their traveling expenses.
2. By allowing them a subsidy for a moderate time to enable them to live in their new home if the salary should at first be insufficient to subsist upon; or, in case they have to begin as volunteers, till their ability has been proved and is paid accordingly.

As a rule this financial support would be given on condition that those young men morally obligate themselves to return the whole or a part of the advanced money to the association as soon as they are in a position to do so without any serious difficulty. Any money so returned will be used in behalf of other young men in like circumstances.

The necessity of financial support will be felt chiefly at first, for as soon as a recommendation from the association will have become a valued passport, it may be expected that rather well-to-do people will apply.

Knowledge of business, of commodities, and of men, can not be got at school nor exclusively behind the desk; by personal experience only is to be obtained that practical skill, the art of availing one's self of circumstances, and that promptitude in making a decision which a business man must possess to succeed; and it is consequently for the benefit of Dutch trade and industry that the public is asked to support our endeavors.

To attain this end ample means are necessary, and the manner in which we hope to obtain them is laid down in the articles of the association, of which we annex a copy.

Immediately after receipt of the answers to this circular we will arrange a meeting for the election of the board.

We hope you will kindly give us your support by joining the association, and remain truly,

THE PROVISIONAL COMMITTEE.

The following table shows the proportion of imports from Germany, France, and the United States, respectively, to the total imports in the following groups of countries in 1875-'77 and 1884-'85 compared:

Countries.	A. — Germany.		B. — France.		C. — United States.	
	Average of 1875-'77.	Average of 1884-'85.	Average of 1875-'77.	Average of 1884-'85.	Average of 1875-'77.	Average of 1884-'85.
European countries.....	15	17	12	10	5	6
Egypt.....		1	19	14	1	1
American countries, United States, Argentine Republic, Uruguay, and Chili.	7	11	12	11	6	7
China.....					1	4
Japan.....	4	7	10	5	7	9
British possessions *.....	0.2	0.5	1.1	1.2	9	8.3

*The amounts of the imports in C varies slightly from what is stated in A and B, owing to one or two slight variations in the British possessions included.

THE FOREIGN TRADE OF JAPAN.

I transmit herewith the "Annual Return of the Foreign Trade of the Empire of Japan for the year 1887," published by the Japanese bureau of customs. From this voluminous report it will be seen that the value of the commodities exported from Japan for the year named amounted, in Japanese silver, to 52,409,223, and the imports to 51,699,769 yen, which is a total foreign trade of 104,108,792 yen, and an excess of exports over imports of 709,453 yen. In this connection I call attention to the note on page 1 of the inclosed report, in explanation of the conversion of some of the values expressed in gold into silver yen. The figures, as above given, for 1887 show an increase of exports over 1886 of 3,538,752 yen, and an increased import of 14,401,026 yen, which is an increased foreign trade over the previous year of 17,939,778 yen.

Table of exports from Japan to some of the principal commercial countries.

Country.	1886.	1887.	Increase.	Decrease.
	Yen.	Yen.	Yen.	Yen.
United States.....	19,988,216	21,529,266	1,541,050	
France.....	9,632,902	9,528,396		104,506
China.....	9,594,907	10,970,043	1,375,136	
Great Britain.....	4,195,355	3,478,729		716,626
Germany.....	864,458	921,723	57,265	
Corea.....	829,316	551,908		277,409
East Indies and Siam.....	649,143	452,172		
Australia.....				

THE FOREIGN TRADE OF JAPAN.

The foregoing table, compiled from the report, shows the value of the exports from Japan to some of the principal commercial countries. The values in this table, as well as all values in this dispatch, are expressed in Japanese silver yen, the value of which is 75.3 in United States money: *

Table of imports into Japan from some of the principal commercial countries.

Country.	1886.	1887.	Increase.	Decrease.
	Yen.	Yen.	Yen.	Yen.
Great Britain.....	12,703,248	18,970,544	6,267,296	.....
China.....	7,123,851	7,985,820	861,969	.....
East Indies and Siam.....	3,561,319	5,291,614	1,730,295	.....
United States.....	3,358,986	3,283,096	.....	75,890
France.....	1,330,913	2,313,345	982,432	.....
Germany.....	2,313,659	4,010,915	1,697,256	.....
Corea.....	563,447	1,010,374	446,927	.....
Australia.....	80,465	32,265	48,200	.....

Table showing total trade of Japan (exports and imports combined) with some of the principal commercial countries.

Country.	1886.	1887.	Increase.
	Yen.	Yen.	Yen.
United States.....	23,347,202	24,812,362	1,465,160
France.....	10,963,815	11,841,741	877,926
China.....	16,718,758	18,955,863	2,237,105
Great Britain.....	16,898,603	22,449,273	5,550,670
Germany.....	3,178,117	4,932,638	1,754,521
Corea.....	1,392,763	1,562,281	169,518
East Indies and Siam.....	4,210,462	5,745,086	1,534,624
Australia.....	550,379	567,347	16,968

The following list shows the principal articles exported from Japan for the year 1887. In the list the figures are given in round numbers:

	Yen.		Yen.
Camphor.....	1,130,000	Waste silk.....	807,000
Ginseng.....	819,000	Cocoons.....	262,000
Sulphur.....	136,000	Floss silk.....	158,000
Cuttle-fish.....	1,051,000	Hides and skins (undressed).....	151,000
Beche de mer.....	250,000	Green and black tea.....	7,349,000
Kauten.....	337,000	Tea dust.....	156,000
Mushrooms.....	442,000	Cotton piece goods.....	169,000
Rice.....	2,255,000	Silk piece goods.....	135,000
Sea-weed.....	594,000	Silk handkerchiefs.....	1,146,000
Shell-fish.....	410,000	Coal (including that for ships' use).....	2,337,804
Shrimps.....	156,000	Timber, wood, and planks.....	188,000
Wheat.....	122,000	Fans.....	202,000
Antimony.....	163,000	Matches.....	941,000
Copper.....	2,031,000	Screens.....	276,000
	253,000	Straw plaits and straw ware.....	361,000
			212,000
			228,000

The following is a list of the principal articles of import into Japan for the year 1887:

	Yen.		Yen.
Clocks	173,000	White sugar.....	3,296,000
Spinning machinery.....	125,000	Raw cotton.....	711,000
Steam engines and boilers	139,000	Cotton on the seeds.....	202,000
Watches.....	368,000	Cotton yarns.....	8,235,000
Flour.....	96,000	Chintzes, or printed cotton.....	318,000
Books	206,000	Cotton drills	132,000
Printing-paper.....	115,000	Cotton satins.....	198,000
Hats, caps, etc	251,000	Cotton velvet	324,000
Gunpowder.....	263,000	Gray shirtings	1,169,000
Aniline dyes	266,000	White shirtings	266,000
Extract of logwood	132,000	Dyed shirtings.....	155,000
Window-glass.....	116,000	T-cloths.....	191,000
Beans, pease, and pulse	425,000	Turkey-reds	358,000
Rice	129,000	Wool.....	189,000
Hides (buffalo and cow).....	392,000	Woolen yarn.....	255,000
Kerosene oil.....	1,881,000	Blankets.....	581,000
Sole-leather.....	260,000	Italian cloths	921,600
Other kinds of leather.. ..	531,000	Flannels.....	323,000
Pig-iron	118,000	Mousseline de laine	1,126,000
Bar and rod iron.....	447,000	Woolen cloths	1,402,000
Iron rails.....	653,000	Woolen cloths (in part wool).....	501,000
Plate and sheet iron.....	218,000	Satin, silk, and cotton mixtures.....	437,000
Iron nails.....	393,000	Canvas.....	193,000
Iron pipes and tubes	334,000	Cotton handkerchiefs.....	151,000
Steel	143,000	Beer and ale.....	368,000
Lead.....	108,000	Wine.....	114,000
Tea lead	136,000	Oil-cake.....	229,000
Zinc.....	138,000	Portland cement.....	109,000
Brown sugar.....	2,418,000	Locomotive engines	79,000

The principal exports to the United States during 1887 were as follows:

	Yen.		Yen.
Camphor	387,000	Silk handkerchiefs.....	816,000
Sulphur	112,000	Fans	97,000
Rice.. ..	98,000	Screens.....	46,000
Rags.....	253,000	Straw plait.....	320,000
Raw silk	11,165,000	Bamboo ware.....	102,000
Cocoons	138,000	Bronze ware	41,000
Floss silk.....	68,000	Lacquered ware.....	64,000
Green and black tea.....	6,772,000	Porcelain ware.....	295,000
Tea dust.....	134,000		

The principal imports from the United States for the year 1887 were as follows:

	Yen.		Yen.
Clocks.....	160,000	Beer, ale, and wine.....	39,000
Watches.....	27,000	Iron and iron manufactures.....	27,000
Flour.....	94,000	Mercury.....	23,000
Books	114,000	Pumps	25,000
Sole-leather.....	113,000	Engines and boilers	20,000
Other leather	79,000	Machinery (including mining, printing, paper-making, sewing, spinning, etc.) ...	60,000
Condensed milk.....	55,000	Provisions	75,000
Cigars, cigarettes, and tobacco.....	70,000		

By comparing the figures in the foregoing table with those of the table of imports from the United States in 1886 it will be found that the following articles show an increased value in import for 1887 over 1886:

Leather

Many other articles imported into Japan from the United States show increases by smaller amounts; and, in fact, nearly all of the staple articles from the United States have either increased or held their own. The decrease, however, on kerosene alone (our principal export to Japan) was 487,000 yen; lead-pencils fell off 26,000 yen, and flour 2,000 yen. This gross falling off of more than 500,000 yen was made up to the extent of 440,000 yen by the increase in other commodities mentioned above, thus leaving a net decrease in Japan's imports for the year 1887, as compared with 1886, of 75,000 yen, as shown in one of the foregoing tables.

As much has been recently said of the growth of German trade with Japan it is interesting to ascertain in what articles the increase of more than 1,500,000 yen of imports from Germany during 1887 occurred. The principal items, in round numbers, are as follows:

	Yen.		Yen.
Gunpowder	128,000	Woolen yarn, from 32,000 to.....	119,000
Aniline dyes.....	49,000	Italian cloths, from 16,000 to.....	51,000
Machinery, and parts of.....	113,000	Woolen cloths, from 206,000 to.....	448,000
Arms and munitions of war.....	159,000	Part woolen cloths, from 9,000 to.....	68,000
Printing-paper.....	33,000	Satin, silk, and cotton mixtures, from 67,000 to	206,000
Other paper	30,000	Chintzes, from 13,000 to.....	30,000
Beer and ale (1886).....	93,000	Zinc from, 21,000 to.....	46,000
Beer and ale (1887).....	248,000	Iron rails, from 165,000 to.....	311,000
Wine, liquors, etc., increased from 17,000 to.	38,000	Iron nails, from 128,000 to.....	171,000
Precious stones and jewelry, from 666 to.....	10,000	Leather, from 10,000 to.....	34,000
Portland cement, from 10,000 to.....	27,000		

In fact, nearly every article imported from Germany has been imported in 1887 to a larger extent than heretofore. Some of the articles imported from Great Britain in greater quantities in 1887 than in 1886 are given below:

	Yen.		Yen.
Arms and munitions of war, increase.....	320,000	Cotton yarn, from 3,116,000 to.....	3,956,000
Gray shirtings, from 848,000 to.....	1,100,000	Chintzes or printed goods, from 133,000 to..	260,000
White shirtings, from 115,000 to.....	258,000	Cotton drills, from 74,000 to.....	127,000
Spinning machinery, from 3,000 to	116,000	Cotton satins, from 47,000 to.....	193,000
Steam-engines and boilers, from 51,000 to ..	112,000	T-cloths, from 114,000 to.....	185,000
Hats, caps, etc., from 113,000 to	225,000	Turkey reds, from 278,000 to.....	345,000
Paper of all kinds, from 116,000 to.....	160,000	Woolen yarns, from 27,000 to.....	109,000
Medicines and chemicals, from 498,000 to.	819,000	Blankets, from 343,000 to.....	557,000
Glass, all kinds, from 28,000 to.....	83,000	Italian cloths, from 834,000 to.....	870,000
Iron rails, from 277,000 to.....	341,000	Woolen cloths, from 378,000 to.....	893,000
Bar and rod iron, from 338,000 to.....	408,000	Cloths part wool, from 187,000 to	427,000
Plate and sheet-iron, from 170,000 to.....	200,000	Canvas, from 67,000 to.....	197,000
Iron pipes, from 32,000 to.....	329,000	Handkerchiefs, from 39,000 to.....	109,000
Lead, from 130,000 to.....	228,000		

An increase of exports from Japan to the United States from 19,988,216 yen in 1886 to 21,529,266 in 1887, a gain of 1,541,050 yen, and a decrease of United States exports to Japan for the corresponding period from 3,286,000 yen in 1886 to 3,283,096 in 1887, a loss of 75,090 yen, took place.

which is inconsiderable

the decrease in kerosene alone, as already set forth in the foregoing analysis of Japan's customs returns has been 487,000. Leading American merchants resident in this Empire account for the exceptionally large export of kerosene in 1886 on the ground that the international treaty conference for the revision of the Japanese treaties was then in session at Tokio, and the common report, amounting to an open secret in mercantile circles, having gained currency that a higher import duty than that at present imposed on kerosene would be provided for in the new treaties, it naturally followed that extraordinarily increased shipments of this product from the United States to this market were the results. This movement was of course intended to meet the anticipated increase of duty from 5 per cent. *ad valorem* to such higher rate as might be agreed upon by the treaty conference. With full stocks in store of that article, which has become a necessity in Japan as well as in other Eastern countries, and having paid the lower duty, the importers would have reaped the profits of the enhanced price of kerosene expected to follow the higher tariff rate. The treaty conference having adjourned without revising the tariff rates, left the dealers in kerosene with an oversupply on hand, which has necessarily reduced the imports of that commodity during 1887. This decreased import into Japan of kerosene may, therefore, be regarded as abnormal and not as indicating a decreased demand and consumption of that product from that of previous years. When it is considered that nearly all other articles of commerce between Japan and the United States increased, as shown above, there is no especial cause for dissatisfaction or regret at the condition of the trade of the United States with Japan in 1887 as compared with 1886.

The increase of exports from Japan to the United States of more than \$1,500,000 during the last commercial year is practical proof (there being no sentiment in trade) that the United States continues to find in Japan a better and cheaper market than elsewhere in which to purchase the special commodities represented by these 21,000,000 yens' worth of supplies required for the American home demand.

There is a positive annual demand in the United States for over 7,000,000 yens worth of the quality of teas imported by our people from Japan, and the Japan supply so far fully meets this demand, and on such terms as accommodate the consumer and makes profitable the middle agency of the merchants who direct its import and transit across the sea. Otherwise China, India, and other lesser tea-producing lands would monopolize the American tea trade, now largely supplied by Japan. Also with raw silk; the investment of over \$11,000,000 annually in this commodity by the American people, and that, too, admitted duty free into American ports, has created a great American industry of comparatively recent growth in the manufacture of silk, which manufacture yields largely remunerative profits to the investors, gives occupation to laborers

favor of Japan annually by 18,000,000 yen; but the products which she sells to the United States are now necessities to our American home market, and these millions are in fact reproduced annually by interests and profits on the original principal, just as certainly as are the profitable returns realized by the direct exports of our own productions in Japan.

As has been already observed from the foregoing tabular statements, the four leading constituents of the American export trade to Japan are kerosene (over one-half of the whole export from the United States to Japan in 1887), books, clocks, and flour.

In cotton and woolen goods and iron-manufactured products Great Britain, continental Europe, and India have heretofore monopolized the trade almost exclusively. The class of cotton and woolen goods, especially cotton goods, demanded (and the only kind demanded) by the Japanese people are not as yet manufactured in the United States. It is a specific requirement and demands a specific supply by the manufacturer. The class of cotton goods I refer to is the lightest of cotton piece goods, 40 yards to the piece, and which Great Britain and other European countries and India now furnish to this market weighing 9, 8, 7, and even less pounds to the piece. The lightest American cotton piece goods in commerce, I believe, weighs 14 pounds to the piece, and I believe that even this is exceptionally light for American cottons. The character and textures of the native Japanese costume, it is alleged, for the lining of which the light cottons are used, creates a demand for this light and correspondingly cheap cotton goods. That our American mills and manufacturing capital will ever attempt to enter the Japanese markets with a class of cheap light cottons against European and India competition will depend no doubt on two considerations and conditions: First, whether the present high American tariff rates are to be maintained, and, second, whether the home demand for the higher priced products of American manufacturers will be a supported and continuing demand by our sixty millions of people? If the tariff is maintained as now, higher prices will be demanded and received for the same fabrics at home than can be realized in any other country, and especially so long as no surplus or overproduction gluts the home market. To prevent such overproduction of manufactured products, the practice has too often been to close the factories, shut out from employment the laborers who must toil for food and clothing and wait for the supply to become exhausted rather than seek abroad a market at lower prices; the increased price paid by the consumer being, of course, controlled and scaled by the amount of the duty imposed on similar manufactured imports. With an adequate tariff reduction, sufficient only for the national revenues, with the vastly increasing development of the producing as well as manufacturing capacities

... by the fact that nearly 7,000,000 bales of raw ... miles of

early future hopefully enter the markets of Japan and all other Oriental countries and compete for an equal share of the cotton and woolen trade now enriching the commerce of other countries. The last annual returns of Chinese customs show that in the northern portion of that great Empire we sell nearly \$6,000,000 of American manufactured cotton goods (drills and sheetings) directly exported from our own mills. This, too, in the teeth of the competition with the greatest and most enterprising of European manufacturing nations. If the United States can already sell profitably these \$5,000,000 or \$6,000,000 of cotton goods to China, why not to Japan, which is even more accessible to our exporters than her imperial and colossal neighbor?—TOKEI, JAPAN, *May 28, 1888.*

RICHARD B. HUBBARD.

ASPHALT AND PETROLEUM DEPOSITS IN VENEZUELA.

Ever since the early Spanish explorations the existence of asphalt has been recognized and that of coal suspected in this section, but it was not until after the erection of Venezuela into an independent republic that these deposits began to attract attention.

In the year 1834 the Indians of the Goajira were making incursions into civilized territory, near the river Tocui, and during one of these raids various cattle-owners from the town of Mojan, with a detachment of men, mounted and armed, began an exploration of the forests which extend from the westward of that village as far as the foot of the mountains. Their object was to search for cattle which had been stolen by the Indians, and in the course of their investigations they encountered a phenomenon previously unknown to any one. In the side of one of the banks of a gully was an aperture, resembling a large cave, which shot forth, without intermission, smoke, flames, and burning cinders. The exploration here terminated, and on the return of the party its members gave their versions of the circumstances of the discovery of what they termed a volcano.

The Government did not then occupy itself with the investigation of the position and character of this phenomenon, nor were there any individuals willing to undertake such a difficult exploration through large, uninhabited forests, intersected in all directions by deep gorges. The belief in the existence of a volcano became, however, universal, and fifteen years after the first discovery various residents of Mojan stated that for several days following the earthquake of May 3, 1849, there was seen in the direction of the mountains of Perija a great cloud of smoke during the day and at night a splendid brilliancy. Neither at this time did the Government take any measures to ascertain the facts, and the public in general did not much occupy itself with the phenomenon, following, as it did, in the wake of a public calamity.

Later, however, after repeated efforts on the part of various individuals, the Government was induced to appropriate a small amount for purposes of exploration. From the Sierra of Perija, in the part nearest the lake, to the west of Maracaibo, stretch in a NNE. direction the hills called the Sierra de Tulé, whose elevation is not very considerable, and with an extension of about 50 kilograms. To the west of these hills runs the river Tocuy, and on its east side are the headwaters of the rivers Tulé and Riocito. The Tulé, which is the larger, begins its easterly course at the northerly part of a cordon of low hills, known as the *Sierrita de los Guineos*. It follows in this direction until it reaches the

the swamps of Tulé, where it deposits a portion of its water. From this swamp its course is to the north for more than 30 kilometers, and it then empties into the river Tocuy at the distance of 1 league from Caño Negro.

The river Riocito, commencing about 15 kilometers from the Tulé, follows approximately the same course as the latter until its junction with the Tocuy.

Neither the Sierra de Tulé nor these two rivers are found on the map of the state constructed by Codazzi, previous to 1830, nor in other maps made subsequently, all of which, however, have for a basis the work of Codazzi. Beside the range known as the Sierrita de los Guineos there are two others of slight elevation and somewhat distant one from another, the one beginning near the river Tulé and the other near Los Ranchos de Guasqual.

The general direction of the road from Maracaibo to Irragori is from east to west, with a very slight northerly inclination, the distance being about 80 kilometers. The road is almost level, with a barely perceptible decline from the Sierra to the lake. A cart-road could be easily constructed, and should a railway be projected there would be close at hand the best class of wood for that purpose.

At the beginning of the exploration of the district situated between the Sierra de Tulé and the river of the same name attention was drawn to the numerous croppings of asphalt noticed at the foot of the Sierra de Guasqual. These croppings begin above Matuzalen and follow parallel to the sierra, on its eastern side, as far as its extremity. All these deposits of asphalt are found in various stages of condensation, none, however, having the solidity of those of San Timoteo and the swamp of Mené on the east coast of the lake. The deposit of Matuzalen is the principal, having 60 meters of length and from 10 to 15 of breadth, and the force with which it sprouts up raises it more than half a meter above the level of the ground. At a distance of 30 kilometers east of Irragori, near the road leading to Maracaibo, and on an estate called Matapalo, is found a large asphalt deposit of an area of about 6,000 square meters.

COAL DEPOSITS.

It is the abundance of carboniferous deposits, however, which gives the greatest importance to the territory explored. At little more than the distance of 1 kilometer from the river Tulé, near Los Ranchos de Guasqual, was found the first view of coal among the many discovered during the exploration. From this point, for a distance of 5 kilometers, exist fourteen veins more of the same mineral visible in the banks of the river, many of them measuring from 10 to 30 feet in diameter, and with an apparent direction of NNE. and SSW. A number of these veins traverse the bed of the river at a depth of more than 3 meters, and it is probable that they extend a long distance on the other side.

Continuing the exploration along the river for a distance of 10 kilometers it may be confidently asserted that its banks, as far as the foot of the sierra, are an almost homogeneous composition of the same mineral visibly cropping out with scarcely any interruption. These croppings are also visible at various points of the banks of the creeks which empty into the Tulé and Riocito, and abound in the last-named river for a distance of more than 12 kilometers.

In view of these facts it may be safely affirmed that in that part of the territory included between the Sierra de Tulé, the river of the

Three of these coal veins are in constant combustion, the causes for which, and the date of commencement, are unknown. The first of these three is situated on the right bank of Algibe Creek, about 1 kilometer from Los Ranchos de Guasual. It does not eject either smoke or flame, and its state of combustion is revealed only by the elevated temperature of the spot.

The second ignited vein is upon the left bank of the river Tulé, 6 kilometers distant from the before-mentioned Ranchos de Guasual. At a distance of 15 or 18 feet above the level of the river there is a small fissure, measuring about 18 by 6 inches, from which smoke is constantly issuing. To the right and left of this crevice are several smaller ones, which do not eject smoke, but which give out an intense heat, showing the activity of the combustion.

The third vein is found close to the sierra, on the bank of a creek, and at a short distance from the river Tulé. From it smoke is constantly issuing, accompanied frequently by flames, whose brilliancy, it is said, may be distinguished, on clear nights, from localities only a few miles west of Maracaibo. Many circumstances unite to confirm the belief that this is the volcano heretofore mentioned. All this coal is of one quality, and of the bituminous variety. It is very similar to the cannel-coal of England, although, perhaps of less density, and containing less bitumen, and appears free from sulphur and other substances which many other coals contain. It burns freely in the open air, almost without smoke or sparks, producing a bright and clear flame, with a sufficiently intense heat. It does not "clink" or disintegrate to any great extent in the process of combustion, and leaves a very small residue of ashes. It is believed that this coal is far superior to any other as yet discovered in Venezuela, and it is to be regretted that the state has not sufficient resources to undertake the working and development of this wealth lying less than 100 kilometers from Maracaibo.

No mine in Venezuela offers advantages equal to those of Tulé, not only on account of the excellent quality and extraordinary abundance of the coal, but also from the facility of working. All the veins are found at such a slight depth below the surface that nothing more than trenches are needed for their development. In only one locality, and for but a short distance, would galleries be necessary, and these could be easily run both straight and transversely, and in no part of the carboniferous territory would it be necessary to erect machinery to raise the coal to the surface.

Upon considering the extraordinary size of the veins of coal which cross the river Tulé, the idea occurs that the beginning of this extensive carboniferous formation may be found at a considerable distance, and it would be interesting to decide the following questions:

1. To what distance do the croppings to the north of the river Riocito extend?

2. Whether the Sierra de Tulé contains coal deposits equal or similar to

3. Whether the carboniferous formation extends to the south of the river Tulé as far as the Sierra of Perija?

If the formation is also found in the last-mentioned range there can be no doubt that there is the basis of all these deposits. In the department Guzman Blanco, bounded by the lake, the rivers Palmar, Santa Anna, and Sierra de Perija are found a considerable number of asphalt deposits, and a coal formation at the foot of the sierra, visible in two large crossings situated south of the town of Machiques, between Rio Negro and Santa Anna.

At La Paja, near the river Apon, pieces of amber have been discovered, but no special investigations have been made respecting the possible abundance of this substance.

PETROLEUM DEPOSITS.

That part of the department Colon situated between the rivers Santa Anna, Zulia, and the Sierra of the Colombian frontier is very rich in asphalt and petroleum.

The information which we have regarding this extensive and interesting section, which is an uninhabited forest, is derived chiefly from the reports of the searchers for balsam copaiba, which abounds in this region, although the following data are taken from the personal observations of an American gentleman who made a special exploration. Near the Rio de Oro, and at the foot of the sierra, there is a very curious phenomenon, consisting of a horizontal cave, which constantly ejects, in the form of large globules, a thick bitumen. These globules explode at the mouth of the cave with a noise sufficient to be heard at a considerable distance, and the bitumen, forming a slow current, falls finally into a large deposit of the same substance near the river bank.

The territory bounded by the rivers Zulia, Catatumbo, and Cordillera is rich in deposits and flows of asphalt and petroleum, especially toward the south, where the latter is very abundant. At a distance of little more than 7 kilometers from the confluence of the rivers Tara and Sardinete there is a mound of sand of from 25 to 30 feet in height, with an area of about 8,000 square feet. On its surface are a multitude of cylindrical holes of different sizes which eject with violence streams of petroleum and hot water, causing a noise equal to that produced by two or three steamers blowing off simultaneously. For a long distance from the site of this phenomenon the ground is covered or impregnated with petroleum. The few explorers for balsam copaiba, who have visited this place, call it the *infernito* (little hell).

Among other items it is stated that from one only of these streams of petroleum was filled in one minute a receptacle of the capacity of 4 gallons, which for one hour would be 240 gallons, or 5,760 gallons in twenty-four hours; and even supposing this calculation to be somewhat exaggerated, the considerable number of petroleum jets in constant

Considering the immense amount of inflammable gases which must be given out by the flows and deposits of petroleum described above, it may be easily believed that this has a direct bearing upon the phenomenon known since the conquest as the "Faro" of Maracaibo. This consists of constant lightning, without explosion, which may be observed toward the southward from the bar, at the entrance to the lake, and which Codazzi, in his geography, explains as being caused by the vapors arising from the hot-water swamps situated about 1 league to the eastward of the mouth of the Escalante River, at the southern extremity of the lake.

In the department Sucre, at the foot of the mountains, are found various croppings of asphalt and coal. Near the mountains, and not far from the river Torondoy, there are various flows of a substance which appears to be distinct from either asphalt or petroleum. It is a liquid, of a black color, with little density, and strongly impregnated with carbonic acid, and its apparent identity with a substance met with in the United States among the great anthracite deposits, leads to the belief that there also may be discovered formations of that valuable mineral.

The foregoing data have been collected to call attention to the possibilities of successful investment of capital. As I have already reported to the Department, with detailed explanations, British capitalists have captured a flourishing petroleum industry, situated in the first mountain range south of the lake.

The state of Zulia, in which are situated all the deposits of coal, asphalt, and petroleum herein mentioned, is as yet free from any monopolistic concession; but this can not last forever, and it remains to be seen whether American enterprise and capital will eventually take in hand the development of what should be a most profitable industry, or whether, as is usually the case in South America, Europeans will reap the fruits of information furnished, perhaps, primarily, by the representatives of the United States. There are many other natural advantages in Venezuela which could be developed without excessive expense, and with an almost absolute certainty of most profitable results.

The Government is disposed to extend every reasonable encouragement and protection, and to-day various European corporations are drawing large incomes from the capital which they had the courage to invest in this country. — MARACAIBO, *February 8, 1888.*

E. H. PLUMACHER,

Consul.

INTRODUCTION OF THE TELEPHONE INTO SIAM.

The plant for the telephone at Bangkok has arrived from Germany. I am informed by an electrical expert conversant with telephonic affairs that the instrument is much inferior to the American instrument, costs about five times as much and has not near the power of the Bell; but as the control of the matter was in the hands of a German who has a friend at court, no one else was consulted in the matter, and he had the power to do as he pleased. As it is, the Germans are getting a strong hold here with the officials, which is somewhat galling to the English and French residents, who, in the past, had a monopoly of the business. — BANGKOK, *April 17, 1888.*

JACOB I. CHILDS,
Consul-General.

LAWS RELATING TO STRIKES IN THE NETHERLANDS.

There exist no laws in the Netherlands which apply especially to strikes or the mere quitting of work in order to compel an increase or prevent a reduction of wages. Overt acts, misdemeanors, and crimes occasioned by or resulting from strikes and committed by participants therein come under the common laws of the realm, and are triable and punishable by the courts the same in all respects as are similar offenses perpetrated under any other or different circumstances.

From the above it will be observed that there are no laws in this country under which a strike *per se* is regarded as a conspiracy.

I base the foregoing statements upon information received from the Hon. I. A. Levy, barrister, late member of the States General, and a high authority on such matters. — AMSTERDAM, *May 28, 1888.*

D. ECKSTEIN,
Consul.

BEET-SUGAR DUTIES IN FRANCE.

A bill is now under discussion in the French Parliament to modify the sugar duties for the fourth time since the law of 1884, with a view of diminishing the bonus obtained by manufacturers. In May of last year the excise duty paid on sugar for home consumption was raised from 50 to 60 francs, and the additional 10 francs were to be paid, not only on sugar subject to taxation, but also on the portion which was allowed to go free, amounting to nearly one-third of the production, the beet-root worked up being taxed at an estimated yield of 6 per cent., whereas in that year it produced nearly 9 per cent. The new duty consisted, consequently, of a principal duty of 50 francs per 100 kilograms (2 cwts.), and a supplementary duty, or surtax, of 10 francs. The Government has now presented a bill to reduce the principal duty to 40 francs and increase the surtax to 20 francs. The total duty on taxable sugar

ducers a concession which had served as a basis for their operations. The minister of finance replies that manufacturers will obtain a partial compensation in the further increase in the yields this year to nearly $9\frac{1}{2}$ per cent. It was, besides, never contemplated that so large a portion of the revenue should be lost. In the first year of the system, established in 1884, the bonus of the manufacturers amounted to 25,000,000 francs; in the second to 43,000,000, in the third to 92,000,000, and in the present year, with the surtax of 10 francs, it will still amount to 64,000,000 francs. The public will have, consequently, paid in four years 225,000,000 francs in the form of duty on sugar not received by the treasury. It is true that the price of duty-paid sugar in France fell from 104 francs per 100 kilograms in 1884 to 97 francs 50 centimes in 1887, notwithstanding the increase in the duty from 40 to 60 francs, and manufacturers pretend, which is, no doubt in a measure true, that the bonus has been shared between them and the consumer; but, on the other hand, the price of raw sugar has also fallen from the increased production, and to prevent Belgian and German sugar entering France, a surtax of 7 francs is levied on European sugar. The present bill is still under discussion, but in one or two divisions taken the majority for it was two to one, and little doubt exists that it will be voted. The law would, however, only be applied from September 1 next. An effect of it will be to reduce the indirect bounty on French sugar exported to England. The legal yield or taxable portion of sugar manufactured was raised on September 1 last from 6 to 7 per cent. A manufacturer working in bond for export discharges his bond on exporting in sugar 7 per cent. of the weight of beet-root taken in, and sells the surplus in France on payment of the surtax of 10 francs per 100 kilograms, the difference of 50 francs below the proper duty of 60 francs forming the indirect bounty. As the surtax is to be raised to 20 francs the bounty will become reduced to 40 francs, but it will be obtained on a quantity equal to about one-fourth of the sugar exported. — LONDON ECONOMIST, *June 9, 1888.*

AMERICAN WARES IN AUSTRIA.

This consulate frequently receives inquiries from American commercial and trading firms as well as manufacturers touching exports to and imports from the United States, and concerning articles of American origin which could possibly find a market in this country.

Different articles sold in this market under an American label, and believed by the purchasers to be of genuine American origin, are really nothing but cheap German and British imitations. It may safely be said that numerous articles of our American hardware, mechanics' tools, farming implements, and family utensils would find a market in this country if they could be introduced and brought to the notice of the public. Of such articles, after diligent inquiry on the demands and possibilities of the local market, I would particularly name the following:

1. Improved shoe-makers' tools, new patterns of tailors' shears and flat-irons, latest styles of fluters and plaiters.

2. Iron block planes, adjustable block planes with steel cutters, adjustable plumb and levels, sliding bevels, patent and reversible countersinks, steel screw-drivers, geared breast drills, braces, wrenches of different patterns, screw-augers and steel auger-bits, boring machines, bung borers, patent miter-boxes, bolt cutters, lever chucks, hack saws, rip and cross-cut saws.

3. Shingling hatchets and claw hatchets, pick mattocks and grub hoes, grind-stone fixtures and well wheels, hay and grain forks, manure forks, improved hay knives, cheap lawn mowers.

4. Lock-hinge step ladders, wringers of new patterns, door knobs, especially the ornamental patterns, wardrobe and clothes-line hooks and pulleys, brackets, flush and surface chest handles and drop handles, drawer pulls, side pulleys and screw pulleys, self-acting shade rollers, twine boxes, paper boxes.

5. Meat choppers, sausage stuffers, ice-cream freezers, lemon squeezers, flour and meal sifters, and other articles for family use.

6. Reclining and rolling chairs, barber chairs, folding chairs, light American buggies and cutters, belt lacing, and, finally, different mechanical toys. — PRAGUE, *May 30, 1888.*

CHARLES JONAS,
Consul.

FORMAL OPENING OF THE TRANS-CASPIAN RAILWAY.

On the 27th instant, being the anniversary of the coronation of the Emperor, Alexander III, the Trans-Caspian Railway was opened formally to Samarcand with great ceremony—an event of no common importance to Russia, and even to the world. This road is 1,350 versts in length (about 900 miles) and is primarily a military road. It has been built and is controlled and operated by the ministry of war. At present it is little more than a skeleton road. It is deficient in stations and rolling stock. But the great fact is accomplished. It opens the door into the great field of central Asia. All things requisite to its efficiency will in time be added to it. Though a military road, its political, economical, and commercial uses and results will not be inconsiderable. It brings Russia nearer to its coveted cotton fields, from which so much is hoped. It has already set in active motion measures for the restoration of the old magnificent system of irrigation, which has fallen into dilapidation and disease. One of the old irrigating canals is said to have been 100 miles in length. All successful cultivation of this region is dependent on irrigation, and a great increase in the production of cotton seems to be confidently expected. The importation of cotton into Russia in 1887 is said to have been 10,000,000 poods (the pood being 36 pounds) costing 96,000,000 rubles, and constituting 30 per cent. of the entire imports of the Empire. And it is mentioned with great pleasure by the public prints that the production of cotton in Turkestan rose last year to 500,000 poods, being double that of any previous year.

It is not to be supposed that the Trans-Caspian Railway is likely to rest

of the interest and the ambition of Russia the early extension of the railway may be confidently anticipated.

At the same time the project of the construction of the great continental railway across Siberia to the Pacific is agitated with increased intent. It is said that explorations of the line will be begun this year. It seems hardly probable that the available resources of the Empire will permit the rapid prosecution of this gigantic undertaking, but it is a work which is necessary to the security and welfare of the Pacific possessions of Russia. Its construction, therefore, is only a question of time. — ST. PETERSBURG, *May 31, 1888.*

GEO. V. N. LOTHROP.

NATIONAL HELLENIC EXHIBITION AT ATHENS.

It has been finally decided to reserve a space for foreign exhibitors in the National Exhibition to be held here in October next. The articles so exhibited are, however, to be at the sole risk of the exhibitors, and will not be allowed to compete with national products or manufactures; and should the limited space assigned in the main building be filled, other exhibitors must erect the necessary sheds or pavilions in the grounds at their own expense. — ATHENS, *May 28, 1888.*

WALKER FEARN,
Consul-General.

POPULATION OF STRAITS SETTLEMENTS.

The total numbers of both the births and deaths registered in the colony show a slight falling off as compared with the previous year. The following statement gives the numbers registered in each settlement during the past two years:

Settlement.	Births.		Deaths.	
	1886.	1887.	1886.	1887.
Singapore.....	2,887	2,528	6,308	6,165
Dindings.....	55	78	58	90
Penang.....	1,807	1,912	3,795	3,800
Province Wellesley.....	2,551	2,445	2,697	2,706
Malacca.....	3,205	2,698	2,468	3,163
Total.....	10,505	9,661	15,326	15,924

The ratio of births must always be small as compared with the population, which increases steadily, owing mainly to immigration from China and India, the immigrants including a very small number of females, and the disparity between the sexes being consequently very great. The total population of the colony at the census taken in 1886

NORWEGIAN COD-FISHERIES.

The principal cod-fishery, that at the Lofoten district, which is as important to this country as that of Newfoundland to America, commenced with its usual regularity, in the middle of January, under favorable auspices, and the weather continuing calm and not too cold, it followed its regular course up to the middle of April, terminating with a return of 26,000,000 fish; the allied products amounting to 38,000 barrels of liver, 39,000 barrels of spawn, and 16,100 barrels of oil for medical use; total value of all being \$1,600,000. For the year 1887 the proceeds of the Lofoten catch were 29,700,000 fish, 38,300 barrels of liver, 29,850 barrels of spawn, and 9,500 barrels of medicine oil, estimated at \$1,200,000.

From the beginning of this winter's season the fish proved to be larger and fatter than the two foregoing years, and the prices also by this reason went higher, varying during the season from 15 to 19 kroners for one hundred fish, against 10 to 12 kroners in 1887. Although the produced quantity itself was smaller and the number of fishermen engaged larger, the average gross profit of each fisherman this winter is estimated at 190 kroners, against 163 kroners in 1887, and 225 kroners in 1886. Besides 648 smacks occupied in curing the fish bought by the producers, there were collected in Lofoten at the height of the fishing season 7,957 fishing-boats, whereof 1,520 used only nets, the rest using the long lines or trimmers and hand-lines, the whole fleet being manned with 33,700 hands. In 1887, 6,883 boats with 28,300 men were employed.

Besides the Lofoten cod-fishery, that at the so-called "outer side," comprising the much exposed north coasts of the districts of Westeraalen and Rôst, is of importance, and particularly this winter, was very successful, producing 10,000,000 fish. Also in the southern fishing districts of Sôndmøre and Romsdalen, situated between this city and Drontheim, the catch turned out satisfactorily, being reported at 12,000,000 fish at least, this being an increase of more than 9,000,000 fish as against the previous year. The size of the fish was large and the quality better and fatter than the previous two years, and consequently produced oil and spawn in increased quantities.

According to the above statements the total proceeds of the winter's cod-fisheries, reported now to be finished, amount to 48,000,000 fish, but no doubt 50,000,000 fish can be counted upon for exportation, of which 45,000,000 are salted and cured, and the others exported in the dried state.

The still remaining cod catch, in the farthest northern districts, at Finmarken, from Tromso around the North Cape and to the Russian border, the so-called capilon fishery, has already commenced, but up to this time the result had result. A total failure in these parts may be anticipated. —

SUMATRA TOBACCO.

The Deli Company, of Amsterdam, has just published the results of its operations, covering the yield of the crop of 1886, which was disposed of in this market in 1887, and I quote from the company's report as follows:

The company owns twelve plantations, and raised upon them and brought into the market 24,013 bales of tobacco, and had also consigned to them by and sold for other planters and owners 44,410 bales of tobacco. The average price realized for their own tobacco was 173 cents, Dutch currency, per one-half kilogram, as against 161 cents for their crop of the previous year (1885).

The company's reserve or sinking fund has been increased by 436,631 florins, and amounts now to 2,331,792 florins. The company's capital (2,000,000 florins) remains unchanged. Its working capital amounts at this time to fully 8,000,000 florins.

Finally, it declares a dividend of 1,098 florins per share, which, being for 1,000 florins each, is equal to nearly 110 per cent.

The Tobacco Company Arendsburg, of Rotterdam, a corporation which is also engaged in the cultivation of tobacco on the island of Sumatra, a short time ago declared a dividend of 152 per cent. as the product of its enterprise, and on account of the crop of 1886, which was sold last year. —
AMSTERDAM, *March 23, 1888.*

D. ECKSTEIN,
Consul.

AUSTRALASIAN WOOL.

Early in the season of 1887-'88 the wool trade showed every indication of being larger than that of 1886-'87. The copious rains which occurred throughout the whole of the colonies just previous to shearing weighted the fleece somewhat heavily with yolk, Bathurst burr, and grass-seed. The result has been that the clip in many districts was more or less depreciated in value. The northern and western districts are said to have suffered most in this way. The wools, however, in the southern districts, and especially in Riverina, fully sustained their usual high character. At the opening of the sales in Sydney on October 12, 1887, Messrs. Mort & Co. brought forward a catalogue of 1,170 bales. The sale had been delayed about a fortnight on account of the heavy rains, but it was very well attended, and competition was keen. Messrs. Mort & Co. state that growers who sold at the early sales of the previous season, and reaped the benefit of the high prices then prevailing, were somewhat shy of accepting the low prices of the present season. Subsequently the views of the sellers and buyers were brought more into harmony, and sales were freely made. At the sales in November last prices showed a tendency to advance. The fluctuation, however, was slight, and the season all through was said by Messrs. Mort & Co. to be the most even that ever came under their observation. The subjoined table shows the range of the values prevailing throughout the season at the Sydney sales.

	Pence.	
	10	to 11
Super, skirted.....	8	to 9
Good average, free.....	7	to 7½
Medium, faulty.....	4½	to 6
Inferior, burry.....	7½	to 9¾
Lambs, super.....	5	to 6
Average.....	3	to 4
Short, burry		

	None offering.	
	12	to 14
Superior	10	to 11
Good average.....	9	to 9½
Dull, skirty.....	6	to 10
Heavy, seedy.....	3	to 7
Pieces		
Locks		

	Scoured.	
	15	to 18
Fleece, bright.....	14	to 15
Fleece, average.....	14	to 15
Skin-wool, average	12	to 14
Pieces, free.....	9	to 11
Pieces	5	to 9
Locks.....		

The total quantity of wool handled by Messrs. Mort & Co. amounted to over 60,000 bales, of which nearly 40,000 bales were sold in Sydney. The prices at the February sales showed a tendency to decline, the market being affected by the London sales. Good greasy, however, brought 7¼*d.* per pound, faulty from 6*d.* to 6½*d.*, lambs' wool from 3*d.* to 5½*d.*, washed fleece from 8*d.* to 12*d.*, and scoured from 10*d.* to 15*d.* The Sydney sales showed that a larger quantity of wool had changed than at any other time, and amounted to 150,000 bales. The proportion sold was fully two-fifths more than that shipped. This is believed to have restricted the demand for wool in the London market. The quantity of wool shipped from Sydney up to the 1st of March, exclusive of that sent to the neighboring colonies, was 344,329 bales, against 279,622 bales and 304,521 bales for the two previous seasons, showing an increase of 65,707 bales over that of 1886-'87, and 40,808 bales over that of 1885-'86.

Messrs. R. Goldsbrough & Co., in their circular of March 5, state that "pastoral prospects are very encouraging, an excellent clip and splendid lambing being constantly expected."

At the January and February sales the wools from New England and Manara were found to be somewhat heavy in condition, and the prices, therefore, did not range very high. The season was practically closed on 15th inst. instead of weekly sales are now being 3*d.* to

efforts have been made in Victoria to have the Melbourne sales begin early in September, in order to give purchasers an opportunity of securing the early shorn clips, most of which now go to London.

The change can not much longer be delayed, as early arrivals have been steadily increasing, in bulk. The sales began in Melbourne, on October 5, at the warehouses of Messrs. Goldsbrough & Co., limited. Competition was very sharp, and the prices brought were fully equal to rates in London at the September sales. The bright light wools from eastern Riverina commanded full rates throughout, 11*d.* to 12*d.* per pound frequently being paid for large clips. Mr. Edward Greville's Year Book of Australia states that up to the middle of November the London buyers were the chief operators at the Melbourne sales, and that it is estimated that fully one-half of the wool purchased for export was for English and Scotch manufacturers. The American and continental buyers did not show a disposition to purchase until after the 15th of November, and competition became sharp with them before the close of the year. At Adelaide, South Australia, the sales began on the 20th of September. As a rule the new clip reaches the seaboard early in the season, and the selling brokers there are enabled to commence sales a week or two in advance of the other colonies. There was a large attendance of English and continental buyers. The competition was confined chiefly to the former, especially for the wools from the Darling. The range of prices was not high. The wools offered were more or less seedy. In October greasy merino from the northern part of the colony brought 5¾*d.* to 6¼*d.* per pound, and clean wools 7*d.* to 8*d.* per pound. Cross breds, which are always limited in south Australia, brought from 7*d.* to 8*d.* per pound. The south Australian wools this season were generally better grown than those of last season. Those from the hill country were said to be the most attractive, the north were earthy and seedy, while those from the western districts were not in good condition. The shipments from the 1st of July to the end of December were 127,732 bales, against 118,902 bales for the corresponding period of 1886. At the sales in London in October prices began to weaken. The demand for wools suited to the American market was extremely limited, only about 1,200 bales being purchased during the series. It was noticed at the sales held in November and December that the quantity of the new clip was larger than that of the corresponding periods of 1886 and 1885, the number of bales offered being 90,000 against 58,000 and 35,000 bales for 1886 and 1885, respectively.

The New Zealand Loan and Mercantile Agency Company, limited, report under recent date that wool at the last series of sales in 1887 exhibited considerable variety both in regard to growth and condition. Many wools from Queensland and the northern districts of South Australia and New South Wales proved to be somewhat wasty, whilst buyers who had the opportunity of testing the staple from Queensland combed

Victoria showed increased fineness with some tenderness of staple, but the bulk of the wool from other parts of Australia was well grown and light in condition. Only about 1,500 bales were bought at the last series of sales of 1887 for the American market out of the 49,000 taken for the foreign market. Reports from the manufacturing districts varied somewhat before the sales began, but on the whole they were not encouraging, and prices were low. After the end of the first week competition became more regular, and there was a demand for all descriptions of wool. Good combing wools, which were mainly of the new clip, realized a slight advance. The New Zealand Loan and Mercantile Agency Company, limited, estimate the quantity of wool carried forward to 1888 at 1,100 bales against 35,000 bales brought forward from the previous year.

A singular feature connected with colonial wool is that while the annual quantity is increasing there is no advance in the value; indeed the decline in value since 1872 is something extraordinary. The total product of colonial wool during the year 1872 was 743,000 bales, and the price realized was £19,690,000 (\$95,821,385). In 1887 the total product was 1,444,000 bales, nearly double the quantity of that of 1872, but the value showed a slight increase, being only £526,000 (\$2,559,779) more than that of 1872. The following table shows the total quantity and value of wool produced in the British colonies for each year since 1872, together with the average price per bale in English and American currency:

Year.	Bales.	Average per bale.		Total value.	
		English currency.	American currency.	English currency.	American currency.
		£. s.			
1872.....	743,000	26 10	\$128.95	£19,690,000	\$95,821,385.00
1873.....	747,000	24 5	118.01	18,115,000	85,156,647.50
1874.....	829,000	23 5	113.14	19,270,000	93,796,921.00
1875.....	917,000	22 5	108.28	20,403,000	99,291,199.50
1876.....	937,000	18 15	91.24	17,550,000	85,407,075.00
1877.....	1,021,000	18 15	91.24	19,144,000	93,164,276.00
1878.....	970,000	18 15	91.24	18,187,000	88,507,035.50
1879.....	1,015,000	16 10	80.29	16,748,000	81,504,142.00
1880.....	2,088,000	20 5	98.55	22,032,000	107,178,728.00
1881.....	1,161,000	17 5	83.95	20,027,000	97,461,395.00
1882.....	1,190,000	17 10	85.16	20,825,000	101,244,862.50
1883.....	1,253,000	16 15	81.51	20,988,000	101,938,102.00
1884.....	1,303,000	16 0	77.86	20,848,000	101,456,792.00
1885.....	1,282,000	14 0	68.13	17,948,000	87,153,942.00
1886.....	1,432,000	13 10	65.69	19,332,000	45,414,178.00
1887.....	1,444,000	14 0	68.13	20,216,000	98,381,164.00
Average for sixteen years.....	1,083,187	18 0	88.59	19,457,937	94,702,050.41

It will be seen from the preceding table that the increase in the production of wool has been accompanied by a corresponding increase in the money received by the

in other words the colonies are obliged to grow 80 per cent. more wool than they did in 1872 in order to realize the same amount of money. Nearly the whole of the product of colonial wool is grown in Australasia, the supply from Cape Colony (South Africa) being extremely small. The annual average wool product of Australasia has been for many years considerably over 1,000,000 bales.

EXPORT OF WOOL.

To judge from the returns thus far received, the total exports of wool from all the Australasian colonies for the year ended the 30th of June, 1888, will probably reach 1,239,760 bales, against 1,140,834 bales for 1887. That these figures are not apt to be far from correct, I give below a table showing the export of wool from each of the Australasian colonies, from the 1st of July, 1887, to the 5th of March of the present year, compared with the corresponding period of 1886-'87:

Colony.	1887-'88.	1886-'87.	Decrease.	Increase.
	<i>Bales.</i>	<i>Bales.</i>	<i>Per cent.</i>	<i>Per cent.</i>
New South Wales.....	344,377	285,530	.....	58.847
Victoria.....	325,170	307,453	.....	17.717
South Australia.....	144,255	140,834	.....	3.421
Queensland.....	63,488	51,168	.....	22.320
Western Australia.....	16,438	16,473	.....	.65
Tasmania.....	16,657	13,904	.....	2,753
New Zealand.....	195,511	215,048	19.537	.....
	1,115,899	1,030,310	19.537	105,125
Total increase.....				85,586

CONTINENTAL EXPORT.

The total wool export to the continental markets from March 1, 1887, to February 29, 1888, was 85,980 against 47,805 bales for the corresponding period of 1886-'87 of the export for 1887-'88. Antwerp received 20,336 bales by way of London.

I am indebted to Messrs. R. Goldsbrough & Co., limited, for the following table showing the exports from each of the Australasian colonies to the continental ports for the season 1887-'88:

Exports to —	Victoria.		N. S. Wales.		South Australia.		Total.	
	Direct.	Via London.	Direct.	Via London.	Direct.	Via London.	Direct.	Via London.
	<i>Bales.</i>	<i>Bales.</i>	<i>Bales.</i>	<i>Bales.</i>	<i>Bales.</i>	<i>Bales.</i>	<i>Bales.</i>	<i>Bales.</i>
Antwerp.....	3,999	16,987	15,355	18,537	982	4,697	20,336	40,221
Bremen.....	1,009	151	2,082	263	.....	.....	3,091	414
Hamburg.....	2,124	3,175	1,777	645	76	.....	3,977	3,820
Havre.....	.....	.....	3,421	.....	.....	.....	3,421	.....
Marseilles.....	5,731	.....	2,405	.....	1,405	.....	9,700	.....
Total.....								

EXPORT TO THE UNITED STATES.

Messrs. R. Goldsbrough & Co. supply the following table showing the export of wool direct to the United States from Melbourne for each season since 1871-'72. The first cargo of 12,000 bales was forwarded to New York in the ship *Hercules* in 1887:

Year.	Direct.	By steamer, via London.	Total.
	<i>Bales.</i>	<i>Bales.</i>	<i>Bales.</i>
1871-'72.....	18,659	.....	* 18,659
1872-'73.....	11,851	.....	† 11,851
1873-'74.....	9,745	.....	9,745
1874-'75.....	19,042	.....	19,042
1875-'76.....	5,032	.....	5,032
1876-'77.....	7,567	.....	7,567
1877-'78.....	5,071	.....	5,071
1878-'79.....	13,616	3,935	17,551
1879-'80.....	2,499	873	3,372
1880-'81.....	3,843	7,227	11,070
1881-'82.....	2,043	3,751	5,794
1882-'83.....	8,979	5,884	14,863
1883-'84.....	2,346	3,875	6,221
1884-'85.....	10,974	9,187	20,161
1885-'86.....	10,621	24,739	15,360
1886-'87.....	16,105	3,804	19,909
1887-'88.....			

The direct import from Sydney during the season of 1887-'88 consisted of only 486 bales. The wools shipped to the American market seem to be far superior to those of last season.

Messrs. R. Goldsbrough & Co. state—

The eastern Riverina wools were well grown, bright, soft, and extremely light in condition; the very perfection of high merino, and especially adapted to the American market.

The same authority states, in reviewing the condition of the whole of the clip—

Our opportunities for judging the various classes of Australian wools are exceptionally and specially in Melbourne, from the proximity of that port to the chief wool-growing provinces of Australia, namely, Riverina and the western district of Victoria. Melbourne has long been the port not only of the largest proportion of the choicest wools grown on this continent, but of a greater variety of the staple than any other port; consequently the wools submitted in her sale-rooms represent the produce of a very wide range of country, extending from Tasmania to the Barcoo on the one hand, and from the southeastern district of south Australia to the shores of the Pacific Ocean on the other, with occasional parcels from north Queensland, New England, West Australia, and New Zealand, thus enabling us to speak of the year's clip from a very favorable standpoint. Taking the clip as a whole it may be classed as a long way above the average, for though deficient in quality the chief essentials of a thorough combing-wool were present in almost every flock.

That the Department of State may be supplied with full information, not

tralasian wools in general, I forward herewith a collection of samples which I have been fortunate enough to obtain, through the assistance of Mr. J. H. Maiden, F. R. G. S., curator of the Technological Museum, at Sydney. These samples represent almost every grade of Australian wool suited to the American market.*

Mr. Maiden says, in a note accompanying the samples bearing date the 3d instant:

I am desired by the committee of management of the Technological Museum to point out that the collection of wools sent to you for the Department of State, at Washington, D. C., is a very valuable one on account of its representative character. I hope it will arrive at its destination safely and be appreciated. I am also desired to point out that the arrangement of the collection is due to Mr. Alfred Hawkesworth, honorary wool classer to the museum, whose knowledge of Australian wools is as varied as it is profound.

A descriptive list of these samples, prepared by Mr. Hawkesworth, is appended at the conclusion of this report.

THE EFFECT OF AUSTRALIAN WOOL ON THE MARKETS OF THE WORLD.

Mr. William Findlay, of Sydney, to whom I am indebted for much valuable assistance in the preparation of this report, has recently drawn attention to the fact that the Australasians are in the habit of attributing to their wool supply a far greater influence upon the markets of the world than it deserves. It is often asserted here that when the clip is short wool will be dearer, and when large that it will be cheaper. The fallacy of the assertion will be apparent when it is considered that Australasia supplies annually about 450,000,000 pounds of wool against the world's supply of 2,000,000,000 pounds. For instance, it is known that the number of sheep in Europe has decreased about 50,000,000 during the past ten years, or equal to a production of 200,000,000 pounds of wool. The production of wool from the River Plate increased from 185,000,000 pounds in 1879 to 240,000,000 pounds in 1887, or an increase of about 55,000,000 pounds, although there was a decrease of 24,000,000 pounds from 1885 to 1887. In the United States the increase from 1880 to 1884 was 68,000,000 pounds, and the decrease from 1884 to 1887 23,000,000 pounds. Mr. Findlay commends a report just published by the United States Bureau of Statistics, showing the effect of the production of wool upon the population which he thinks of special interest to Australasians, inasmuch as the results obtained in America are certain to be repeated here. I learn from the report referred to that in 1840 the sheep in the United States of America numbered about 19,000,000. In 1880 the number had increased to 35,000,000; but in 1840 the bulk of the sheep were grazed in the New England and Eastern States and none in the Southern and Western States. In 1880 the Southern and Western States grazed one-third of the whole number, while the New England and Eastern States only grazed half the number they had in 1840. The highest point was reached in 1884, when the number of sheep was 50,000,000. Of that number more than half were grazed in the C. 11

and Western States, and only 8,000,000 in New England and the Eastern States, showing that the increasing population drove the sheep out of the Eastern and New England States toward the more sparsely-settled Southern and Western States and Territories, the land being required, where population was dense, for agriculture, and being too dear to profitably graze sheep. Since 1884 even the Southern and Western States seem to have become unable to sustain their former number, the result being that the total number of sheep in the United States has decreased from 1884 to 1887 by about 6,000,000. As the population of the United States is increasing very rapidly (the annual increase being estimated at nearly 2,000,000) and continually pushing out West and South, it is not unreasonable to suppose that the reduction in the number of sheep which has been going on in the New England and Eastern States has now set in in the West and South. It has been observed that from 1879 to 1887 River Plate and colonial wool increased from 1,500,000 to 2,000,000 bales, or an increase of 500,000, while from 1877 to 1887 the supplies of Australasian, South African, River Plate, and United States wool increased from 2,000,000 to 2,700,000 bales, or an increase of 700,000. Yet we find that the consumption has kept pace with the supply, for at the present time manufacturers are bare of stocks.

The periodical droughts in Australasia have affected severely the wool industries, the sheep in many cases dying by millions; nevertheless, the annual supply of wool has shown a steady increase. New South Wales alone increased the number of her sheep during the year just closed fully 8,000,000, and the lowest estimate of the increase in the whole of the group that I have seen is 12,000,000. It is said, however, that Victoria, Tasmania, and New Zealand are fully stocked, and that the grazing capabilities of South Australia are not likely to increase unless a further supply of water is discovered. Western Australia, with its huge unwieldy territory, is almost at a standstill with something under 2,000,000 sheep, dry and barren country and poisonous plants preventing any increase of consequence. Speaking generally, it may be assumed that that part of Australia within the tropics is unsuited for the production of wool. In Queensland there is much country outside the tropics which is as yet barely stocked, and an increase of, say, 15,000,000 sheep may be looked for during the next twenty years. As regards New South Wales, it is difficult to estimate what is the average number of sheep it will carry. A good lambing season Mr. Findlay says would give this colony next year fully 56,000,000, or 15,000,000 more than the colony ever before faced a drought with. While it is certain that the capabilities of many parts of the colony can be increased by additional water supply, it must not be forgotten that the heaviest losses during the past drought were caused by want of grass.

blood from other countries. The absurd quarantine laws which prevented the importation of arrivals from Europe and America have been repealed in most of the colonies. The stock conference which met in Sydney in October, 1886, strongly urged the removal of the restrictions, but none of the colonies took action until the latter part of 1887. South Australia, Queensland, and Victoria were the first to act, then followed New Zealand, Tasmania, and New South Wales, the last-named colony having removed the prohibitions during the present sessions of Parliament. The New South Wales act, I regret to say, does not admit of the introduction of sheep from the United States except by way of England. The reason given for this proviso is that the animals may have the benefit of inspection at an English port as well as upon arrival in Sydney. The absurdity of the regulation should be apparent to every one, as it is well known that not only sheep but live stock of all kinds are in much better condition in the United States than in any other country in the world. The law, however, as it stands, is a vast improvement upon the old one, as the latter prevented sheep being admitted from any country outside of Australasia.

The first shipment of sheep of any kind since the removal of the restriction arrived here early in February by way of London in the steamer *Port Pirie*. They came from Vermont; 161 were shipped, and I have been informed by the inspector of stock here that only one died during the voyage. The little flock was purchased for Mr. S. McCaughey, of Coonong, in the Uruba district, New South Wales, and consisted of 39 rams and 131 ewes. — SYDNEY, NEW SOUTH WALES, *March 20, 1888.*

G. W. GRIFFIN,
Consul.

REGULATION OF RAILWAY TARIFFS IN AUSTRIA.

[TRANSMITTED BY MINISTER LAWTON.]

The following statements treat exclusively of the supervision of railway tariffs by the Government, and enumerate the measures which the Austrian Government has thought proper to adopt in order to further the interests of the people who avail themselves of its facilities, the commercial community at large, and the companies.

In Austria 5,210 kilometers of railways are owned by the state and 8,234 kilometers are owned by private associations (joint stock companies). The measures adopted by the state for supervision are twofold; first, for state railways; second, for private railways.

AUSTRIAN STATE RAILWAYS.

All rates of freight and passenger tariffs on Austrian state railways are fixed by the minister of commerce. The approval or rejection of

rates for passengers and freights, or proposals for the changing of rules and regulations, must be submitted to a board of commissioners.. [See supplement No. 1].

PRIVATE COMPANIES.

The control of the tariff of private railways, exercised by the state, is principally based upon the respective regulations given in supplements 2 and 3. The rates determined upon for freight and passenger traffic are subject to a revision every three years, and must be submitted for approval to the ministry of commerce and to the ministry of the interior.

In fixing the tariff due notice will be taken of the dividend-bearing character of the road and of the tariffs of neighboring lines. The prices must be made known publicly and the Government reserves to itself the right to require a reduction of rates if the net proceeds of the road exceed 13 per cent. of the paid in capital. [See supplements 3 and 4.]

It will here be necessary to call attention to the fact that the passenger rates on the state railways and on some of the private lines of 4 kreutzers in the first class, 3 kreutzers in the second classes, and 2 kreutzers in the third class for each person per kilometer, have been considerably reduced some time ago. All questions pertaining to the rates of tariff are left to the decision of the ministry of commerce, while all business connected with proposals for transportation is decided by the inspector-general of Austrian railways. [See supplement 6.]

The majority of private railways have their maximum rates of tariff given in their charters. Where this is not the case (local lines) the maximum rates are fixed by the ministry of commerce. Some private companies are bound to submit any proposed change of tariff within the above-mentioned limits to the decision of the inspector-general of the Austrian railways. The other companies, however, have the privilege to fix the rates within the legal maximum limits without being compelled to submit them for decision. Stipulated minimum rates do not exist. With the exception of the southern (Vienna-Trieste) and some local lines connected with it, there are some common general tariff rules including a common classification of goods. [See supplement 7.]

The ruling principles in the adoption of traffic agreements have been made known to the railway administrations at the instance of the convention of March 4, 1883. [See supplement 8.]

All rates of tariff, as well as supplements, must be submitted to the inspector-general of Austrian railways before their publication, at a time to enable that officer to make full examination before approved. Any traffic contract made by two or more parts of any railway system must also be agreed to by a commission consisting of representatives appointed for that system. Abstracts

The inspector-general examines them to see whether they conform with the general rules or the special regulations. A special approval of the tariffs, however, is required only for those private lines which are subject to the inspector-general of railways. The same rule applies to the joint tariffs in which such lines participate.

No special statistical reports, to serve as a basis for the examination of tariffs, are made. As far as such are required, the statistical publications issued by the Imperial and royal central commission on foreign commerce, and the annual statements of the chambers of commerce and boards of trade, will be consulted, and in some cases the desired information will be obtained from the reports of the separate railway companies. If the information thus obtained should be insufficient the required data must be supplied from special inquiries made, or through the chambers of commerce and boards of trade. New tariffs and supplements which do not increase the existing rates must be made known publicly fourteen days before their going into operation. Changes, however, by which the rates are increased, must be brought to public knowledge six weeks before they take effect.

A similar course must be taken when a tariff is canceled without the substitution of a new one. Reductions will not take place until three days after publication in a newspaper designated to this end by the ministry of commerce. The tariffs of the greater part of private lines will be valid for at least three months, and the statutes will regulate also when notice shall be served as to the time when they will cease to be in force. (See supplements 10, 11, and 12.)

In settling these questions the principle laid down in the statutes of most railway administrations to grant no personal favors in such reductions of rates was strictly adhered to, which rendered it necessary that the terms should be made known publicly; that the time during which they are binding is limited, and that caution should be exercised against the adoption of terms which might have the character of personal favors. Goods intended for exhibitions, and live animals, are subject to a special tariff. The granting of reduced fares to corporations, societies, etc., which usually amount to $33\frac{1}{3}$ per cent. of the normal rates, is subject to approval of the ministry of commerce on the roads which claim a subsidy from the state. The administration of the last named roads is also bound to this rule when granting free tickets for more than one single trip.

[TRANSLATION.]

The board of directors of Austrian state railways has published its statement for 1887. The state railways at the end of that year had a length of 5,409 kilometers and had received an addition of 322 kilometers, or 5.9 per cent., partly by the opening of new roads and partly by assuming charge of the greater part of the lines of so-called local railroad companies. The number of employes was 14,072, or 538 more than at the end of 1886, and the amount paid for salaries was 12,000,000 florins.

The following table shows the receipts and expenses of these 5,500 kilometers of railways as compared with 1886:

Railroads.	Receipts.		Expenses.		Surplus.	
	1887.	Increase over 1886.	1887.	Increase over 1886.	1887.	Increase over 1886.
	<i>Florins.</i>	<i>Florins.</i>	<i>Florins.</i>	<i>Florins.</i>	<i>Florins.</i>	<i>Florins.</i>
Total lines.....	47,304,000	2,643,000	27,844,000	700,000	19,459,000	1,942,000
Rudolfs Railroad	6,191,000	426,000	3,810,000	42,000	2,381,000	383,000
Western Railroads.....	30,978,000	1,251,000	17,222,009	428,000	13,755,000	822,000
Galician Railroad.....	3,818,000	587,000	3,060,000	211,000	758,000	376,000

As the capital invested in the total net-work (in which is included the Prag-Due and Due-Bodenbach railways as well as the Albrecht and the Moravian frontier) was 747,000,000.48 florins, the net receipts represent an interest of 2.6 per cent., and for the state railways proper, with an invested capital of 660,000,000.57 florins, the interest is 2.54 per cent.; for the Galician lines, with a capital of 61,000,000.64 florins, 1.23 per cent.; and the Western lines with the Rudolfs Railway, with a capital of 571,000,008.8 florins, yielded 16,000,000.13 florins or 2.82 per cent. To show the earnings of the state railways the statement gives a comparative table with the earnings of the lines whose securities are guaranteed by the state. From this it will be seen that seven different private railway companies so guaranteed in 1886 by the state, the aggregate invested capital of which was 323,000,000.9 florins, yielded net receipts of 7,000,000.03 florins or 2.17 per cent., while the roads owned by the state, as shown above, yielded 16,000,000 florins or 2.54 per cent. of the invested capital, amounting to 660,000,000.5 florins. The report goes on to say that the result is plainly not owing to the difference in the management between private and state railways; but aside from the larger amount of capital invested, chiefly due to the fact that the state railways transverse densely populated districts, with receipts of 15,000 to 20,000 florins per kilometer, while the others pass through districts yielding only 8,000 to 9,000 florins, and also that the running expenses, on account of the unfavorable grades, are much higher than on the older lines or those owned by some of the better situated private companies.

The expectation that the adoption of uniform rates of tariff for the transportation of certain staple articles over a large system of railways would have a favorable effect has been fully realized by the increase in freight earnings. These additional earnings were also to a great extent due to the increased transportation of grain caused by the proposed increase of the German grain duties. Stress must be laid on the fact that in this unusual period of export the Arlberg railway has fully met the expectation which was entertained respecting its capabilities. The freight carried over this road in 1887 amounted to 447,000 tons, exceeding the estimates made by 47,000 tons without at any time straining its capacity. The report further says: While, therefore, the expectations have been apparently realized which were entertained regarding the introduction of tariff measures on the state railways, the fact must also be mentioned that the complaints made by other roads of alleged excessive reduction of tariff rates have almost entirely ceased. The reason for this is evidently the more favorable turn which business has taken and the increase in their receipts during the continuation of the state railway tariffs, proving that the previous decrease of receipts was not owing to these tariffs. The large earnings of the Northern Railway and the Buschtierather road, which have also adopted the State Railway tariff rates, prove their benefit still more forcibly.

» Freight traffic shows an increase of business and larger receipts in 1887, of whom

amounted to 12,100,000 tons, of which 11,200,000 were car-loads, and shows an increase over 1886 of 1,190,000 tons or 10.9 per cent. Receipts were 33,700,000 florins (28,000,000 florins for car-loads) and were 2,180,000 florins or 6.92 per cent. more than in 1886. The western state railways show an increase in receipts of 1,500,000 florins, of which 1,200,000 florins are for grain freights. The largest classes of freight carried were brown coal, 3,370,000 tons; coal, 1,200,000; grain, 1,100,000; and timber, 1,050,000 tons.

The expenses amounted to 24,742,849 florins, or 621,027 florins (equal to 2.57 per cent.) more than in 1886, as will be seen from the following table:

Description.	1887.		Against 1886.
	<i>Florins.</i>	<i>Per cent.</i>	<i>Florins.</i>
Administration.....	524,410	2.12	— 48,824
Repairs and supervision.....	7,327,487	29.61	+ 298,485
General traffic.....	9,141,815	36.95	— 120,483
Workshops.....	7,749,137	31.32	+ 491,845
Total.....	24,742,849	100.00	+ 621,027

The item "administration" shows a decrease, resulting from a reduction in the number of employés; and in "general traffic," from savings effected by the discontinuance of the chief bureaus at Budweis and Spalato. The proportion of the expenses for running the road to the transportation receipts was 52.32 per cent., against 52.67 per cent. in 1886.

A comparison of the net earnings of the state railways with the estimates shows a surplus of 3,020,000 florins. The directors point to this fact with great satisfaction, as this surplus served to cover the deficits of 1881 to 1885, which called for a supplementary credit of 3,200,000 florins.

The total result of the traffic is shown by the amount of Government subsidy furnished for the payment of interest and mortgages. After collection of the net receipts in 1887 the state treasury still had to pay 10,380,000 florins, while in the preceding year 12,200,000 were paid. The report further shows that if the management had not been transferred to the state an additional 588,017 florins as subsidy would have been paid out of the treasury between 1881 and 1887. Another calculation shows that from 1881 to 1887, under the state management, the subsidy paid by the Government amounted to 12,536,657 florins, while from 1876 to 1880, when the lines were run by private companies, the sum paid by the state was 13,247,163 florins.

How much the decrease in the amount of subsidy necessary after the roads passed under state management is due to the increased briskness of general business, is answered by a table giving the sums which the state paid from 1876 to 1887 to private companies which still enjoy a state guaranty. From this it appears that in 1880 these guaranties amounted to 4,900,000 florins, while in 1887 they had risen to 7,200,000 florins, or an increase of 2,200,000 florins. Further, that from 1881 to 1887 the average annual sums paid for guaranties were 590,817 florins more than from 1876 to 1880. From this, concludes the report, it would appear that the state railways have not been favored by a general improvement in traffic; on the contrary, with the exception of the great export year 1880, and from September to November, 1887, the whole period of state management may be characterized as one of general depression of business.

When this and the many other difficulties necessary to a change of management are taken into consideration, and it is observed how well the financial reports of these railways for 1887 (the seventh year of their operation) bear comparison with previous statements, it may be certainly hoped that the future of these roads under state management is assured.

AMERICAN TRADE WITH EGYPT AND THE LEVANT.

IMPORTS FOR THE UNITED STATES.

Owing to trade with this part of the world being mainly in the hands of English merchants, dependent upon English shipping, it is impossible to make correct estimates of the quantities or values of supplies in its make-up drawn from the fertile and attractive fields of American production. The superiority of many American manufactured articles over those from other countries is not a new admission. Their fame goes before them, and wherever introduced they become such favorites as soon to be recognized as necessities. Attempts are often made to supercede them, and for a time such attempts may be successful, but the triumph is co-extensive alone with thorough test and the opportunity to reinstate the American products. Such supersession is mainly the outcome of a lack of direct trade with the United States. American cotton goods, for instance, were many years ago freely disposed of in the East, while now they are unknown in its commerce. Had not American shipping, by means of home legislation, been driven from foreign waters, this supply might have been maintained, even in the face of another serious drawback. The English mill owners now buy American cotton and meet a demand with its manufactured products the profits of which might be directed towards the amelioration of home industries which periodically languish almost to destruction. The peoples of the East would be glad enough to buy American cotton converted into cloths by American machinery, but they do not. They fail to consume American goods because there is no direct trade; and there being no direct trade the American genius for introduction is not manifest abroad. Golden opportunities are constantly being wasted. With rapid transit between American and Eastern ports, through which quick returns could be secured, they would not all be thrown away.

In spite of serious drawbacks to trade, some is maintained through the superlative merit of certain American products. American petroleum was for many years almost driven from the East by the Russian product, supplied at a lower price; but the superiority of the former assists it, and the ground lost is steadily being regained. American refined oil, shipped direct from the United States to Egypt, from January 1 to December 31, 1887, reached very nearly 4,000,000 gallons, while some small shipments coming from England swelled the supply to more than the above-named sum. Of American canned goods, a large supply comes eastward from English shippers; English goods. American vegetables,

ucts there were imported into Egypt from January 1 to December 31, 1887, quantities valued at \$1,137,000. Is it not reasonable to presume that, while Europe draws upon America for meat products, Egypt could be supplied by direct shipments from home more cheaply than from other countries where production does not satisfy consumption. Much of the product, however, thus consumed in Egypt, as in the Levant, is drawn from America, paying in its transportation eastward probably as much, if not more, profit to the English trader than it paid the American producer and manufacturer. The gain of the former would, with direct, quick transit from the United States, approximate additional American gain.

Of preserved fruits and vegetables Egypt imported in 1886 a total valued at over \$300,000, while in 1887 their importation fell to a little over \$200,000. For the corresponding years the importation of cereals and vegetables amounted to over \$1,000,000 and \$500,000. Egypt imports annually over \$200,000 worth of candles. Of woods for construction Egypt imports annually about \$1,600,000 in value, and about \$500,000 in charcoal. A vast amount of this wood is transported in ships all the way from Sweden and Norway—further than to the more accessible forests of Maine, North Carolina, and Florida. An embargo has been placed upon the production of tobacco in Egypt. This crop was annually about 6,500,000 pounds, while consumption reaches 13,000,000 pounds. Hereafter, therefore, the importation of tobacco must approximate the last-named sum. Will America refuse to be a competitor for this supply?

EXPORTS TO THE UNITED STATES.

Other items of import, to which American producers might add their quota, could be presented, but I will devote a few lines to an export trade which, with direct transit, could be increased to most respectable proportions. Already a large trade is done with the United States in Egyptian rags and other waste materials used in the manufacture of papers, cotton, raw hides, senna, bones, gums, furniture, curios, musk, cigarettes, precious stones, carpets, and rugs. For the commercial year ending June 30, 1887, the declared exports for the United States represented a value of \$257,469.91. The increase for the present year will be considerable; and yet the figures of declared exports by no means represent the real values of Egyptian exports which find their way to the United States. Trade follows the same course in both directions, and much which Egypt sells elsewhere is credited in trade statistics to England. As an example onions may be cited. During the year ending June 30, 1887, there was a declared export of Egyptian onions for the United States valued at \$12,731.29. For the present year, the shipping season having already ended, the same declared export of onions amounts to \$28,808.89, and I am informed by those interested in this trade that quantities of Egyptian onions are sent to the United States from England, where they are shipped *during the*

States go by steamers via London and Liverpool as do all other declared exports excepting rags and other waste material for paper stock which find transport in Norwegian vessels engaging in lumber transportation. The sending of Egyptian onions to the United States is a new and, I am informed, profitable venture. The object is to put them very early on the market while prices rule high, and the Egyptian product being superior in quality as well as in appearance commands the very highest prices. The shipments begin in March and end in April. In April of this year 850 tons of onions were declared at Alexandria for the ports of New York and Boston. Direct shipments by steam another year would probably be three or four times as great.

DIRECT TRADE.

In presenting inducements for direct trade, by steamer, with eastern Mediterranean ports, I have specialized trade with Egypt. Statistics show that trade between Syria and the United States is considerable. A line of steamers plying between New York, Egypt, and Levant would do what all other steamers in the trade do. They would touch at an Italian port, at Malta, and probably at a French or Spanish port, taking regular freight at all. With passenger accommodations they would carry many voyagers between the East and the West, especially since Egypt is now so popular with Americans as a winter resort. Italian emigration would largely aid in swelling receipts. In presenting the question of direct communication, for purposes of trade between the United States and the East, I reflect a very widespread desire. Many merchants here, comprehending fully the conditions of trade, assert that direct steam communication would be sustained. Such communication, however, should not be spasmodic, but regular and reliable. With this sort of service, and soliciting agents for leading and reliable American producers and manufacturers, there is not a doubt about the trade. It pays English, French, Italian, and other merchants enormous profits, and it sustains huge steamship companies. With the vast, varied, and valuable products of the United States it is senseless to presume a profitable trade could not be established and maintained. Our products, after introduction, would be greedily sought after, and a mutuality in commerce would spring up which, because of the desirability of things interchangeable, would last. —CAIRO, EGYPT, *June 4, 1888.*

JOHN CARDWELL,
Consul-General.

INDUSTRIAL SCHOOL AT REICHENBERG.

This academy, founded by the imperial and royal ministry of schools as a technical academy of the middle grade, is a combination of several industrial schools having, however, different aims. Their purpose is the intelligent theoretical education of young men for important industrial positions, and also the training of those who hope to become manufacturers, in order that they may be able to compete with modern methods. The aim of the school is to elevate home industry to a point of complete intellectual independence of other countries and the improvement of technical work.

The academy is divided into a high school and a workmaster's school, and each of these is subdivided into three branches, architecture, mechanical arts, and chemical technics.

HIGH SCHOOL.

This teaches, through systematically-arranged lectures, all that is necessary for practical industrial work, and at the same time affords a high grade of general education, so that students become qualified to manage a technical trade on a large scale or to fill important positions in large factories. The Government encourages this course by exempting those who pass it from more than one year's service in the army.

The three branches of the high school are:

1. A school for architecture for future architects, engineers, masons, carpenters, etc.

2. A mechanic's technical school for future manufacturers, managers, technologists, the different branches of mechanics, machine architecture, metal and wood work, spinning and weaving mills, etc.

For those students who intend to devote themselves to textile industry there is a special course for the theory and practice of weaving. This course is connected with the weaving school. For the electro-technologists exists an electro-technical laboratory.

3. The chemical school for manufacturers, managers, and technologists in the different branches of the chemical trade, and for manufactures, as calico printing, bleaching, sugar manufacturing, glass and earthenware fabrication, etc. For the chemical branch of the textile industry there is a dyeing school with its own dyeing laboratory.

Instruction in the general preliminary sciences are given to the students of the three classes together, but special instruction for special trades is given separately to those students following each special course. Each class has a four years' course. Entry in the first course is allowed if a certificate can be shown that the applicant has passed the three classes of the public school, the third class of a polytechnic school, or gymnasium where drawing has been obligatory. Students may enter the second class who can produce

certificate of ability to enter the fifth grade of a polytechnic school or gymnasium where drawing is obligatory. New students must pass an entrance examination before the beginning of a semester upon the following branches:

FIRST ANNUAL COURSE.

Arithmetic. — Elementary calculation with whole numbers, common and decimal fractions, metrical weights and measures, squares and cubes of numbers, square and cube root.

Geometry. — Calculation of angles of plane surfaces and of irregularly shaped objects, curves, etc., mensuration.

Natural science. — Knowledge of the more important physical manifestations.

SECOND ANNUAL COURSE.

Arithmetic. — Calculation with whole numbers and fractions, using the most important advantages of reckoning; the four methods of calculating, addition, subtraction, etc.; ratio and proportion; equations of the first degree with one unknown quantity.

Geometry. — The more important theorems of planimetry and the demonstrations of simple construction problems.

Physics. — The more important physical methods with special regard to sound, light, magnetism, and electricity.

Chemistry. — Chemical elements and their most important combinations; familiarity with the common chemical formulas.

Drawing. — Drawing from sketches and geometrical figures; practice in handling the brush and color; the execution of simple geometrical construction with compass and ruler.

Candidates may be excused from examination on these branches upon the production of a proper certificate of their last school year and the drawings then made if up to the requirements. Consideration will be had in those cases where scholars have not had the opportunity to sufficiently practice drawing with regard to their entrance in the second class if it is thought that the pupil can obtain excellence in the trade school.

The number of students which can be accepted is always published before the examination. In deciding as to admissions the results of the examinations will first be considered and then the date of the application. In order to see whether students have reached the standard which is the aim of the school, examinations take place at the end of the course of the high school, and the testimonials issued are equal to those issued by the middle schools, including the privilege of serving only one year in the army. As extraordinary students are admitted those who can prove by a proper certificate from a middle school a good preliminary education. Instruction commences

in September. The fees amount to 8 florins (\$3.20) for six months.

WORKMASTERS' SCHOOL AND SCHOOL OF ARCHITECTURE.

The three professional schools included in this department of the academy offer to such tradesmen who have already worked in architecture or in some branch of mechanics or chemistry the opportunity to speedily obtain theoretical knowledge and practice impossible to acquire in the trades, but absolutely necessary in the close competition of the present day.

The three schools are:

1. The school of architecture for stone-masons, architects, carpenters, tinsmiths, brick-layers, etc.
2. The mechanical school for machinists, locksmiths, mill-constructors, foremen of mechanical weaving and spinning mills, etc.
3. The chemical school for dyers, printers, bleachers, tanners, soap manufacturers, etc.

The mechanical and chemical courses are of two years' duration without interruption. The course on architecture extends over four winters, each term being six months. Students of the latter school may therefore continue their occupations during the summer. The conditions for entering these schools are, first, a proof of having passed the public school and of having practiced at least two years a trade. For entering the school of architecture a proof of one year's practice in architecture will be sufficient.

It is recommended to those who have already entered a trade or manufactory, but who are not able to rise from their present condition, to enter the school for workmasters, especially if they are called upon to continue the business of their fathers, as so often occurs in this locality. The course for both departments of this school begins on September 16; for all courses of the school of architecture on October 15. The fee amounts to 6 florins (\$2.40) per half year. The laboratory tax is 6 florins for ordinary scholars and 17 florins (\$6.80) for extraordinary scholars. Those without means are free.

The imperial and royal ministry of education has established 33 half yearly scholarships, amounting to 30 florins (\$12) each. The Reichenberg Chamber of Commerce gives 300 florins (\$120) annually for the same purpose, as does also the Reichenberg savings bank. There is also a scholars' supporting society to provide for other needs.

'PLAN OF INSTRUCTION OF THE HIGH TRADE SCHOOL.

OBLIGATORY BRANCHES.

First annual course.

German language.—Five hours weekly. Review of etymology and syntax; orthography with practical exercises; reading of descriptive and narrative tales; verbal description of the same as well as written exercises; letter writing; every fortnight school and home work.

Geography.—Review of mathematical and physical geography; special geography of Europe, especially of the Austro-Hungarian Monarchy; hydrographical and climatic conditions of other parts of the world.

Algebra.—Five hours a week. The four principal calculations; vulgar fractions; equa-

Geometry.—Four hours a week. Plane geometry with exercises.

Geometrical drawing.—Four hours a week. Exercise in geometrical construction; projection of points, lines, and simple objects.

Experimental physics.—Four hours a week. The most important physical theorems with special regard to sound, light, magnetism, and electricity.

Chemistry.—Three hours a week. The most important elements and their combinations with special reference to their natural occurrence, but without going closely into theory and without special regard to the various reactions.

Free-hand drawing.—Six hours a week. Copying elementary and geometrical objects and the use of color.

Second annual course.

German language.—Three hours a week. Reading of translations of the classical poetry of the Greeks and Romans; reading and explanation of parts of the new German literature, including information as to the three chief kinds of poetry, accompanied by written exercises; important business letters; every fortnight school work, and every month home work.

History and geography.—Three hours a week. Ancient history, especially of the Greeks and Romans; special consideration of historical facts, with consideration of the geography relating to them.

Mathematics.—In the first semester ten and in the second six hours a week.

Algebra.—Short review of the standard theorems and equations of the first degree; system of involution and the radicals; equations of the second degree; logarithms and their uses; progression; compound interest.

Geometry.—Review of plane geometry; geometrical calculations and the construction of algebraic sentences; plane trigonometry and stereometry; every two weeks home work, and every week school exercise.

Physics.—Four hours a week. Review of the most important standard theorems; statics and dynamics of solid, fluid, and gaseous substances; heat and acoustics; optics; experimental and with scientific proof; basis of meteorology.

Chemistry.—Four hours a week. Chemical fundamental laws; atoms and molecules; the elements and their combinations; basis of organic chemistry.

MECHANICO-TECHNICAL DEPARTMENT.

Descriptive geometry.—Nine hours a week, including the technical department. Most important systems of shadow, perspective, etc.

Mechanics.—Four hours a week in the second semester, together with the chemico-technical department. Determination of the center of gravity; simple machines; elements of hardness; every fortnight home work.

Free-hand drawing.—Six hours weekly. Copying of geometrical objects after models; mechanical drawing.

DEPARTMENT OF ARCHITECTURE.

Descriptive geometry.—Nine hours weekly, together with the mechanico-technical department.

Architecture.—Four hours a week. The connections of stone and wood.

Free-hand drawing.—Six hours a week. Drawing after plastic models, especially the ornamental motion on architectural arrangements.

CHEMICO-TECHNICAL DEPARTMENT.

Free-hand drawing.—Six hours a week. Conclusion of the system of projections;

Free-hand drawing.—Six hours weekly with the mechanico-technical department.

Mineralogy and geognosy.—Three hours a week. Knowledge of the most important minerals; systems of geognosy.

THIRD ANNUAL COURSE FOR ALL OTHER DEPARTMENTS.

German language.—Three hours a week. Reading of prosaic selections of lyrical and didactical poetry; exercise in lecturing and using the matter read for written exercises; every fortnight school work, and every month home work.

History and geography.—Three hours a week. History of the middle ages and the present up to the Westphalian peace, with explanation of the condition of culture at that time; repetition of the respective parts of geography in general; view of the present condition of production and industry of Europe and the other most important parts of the world.

Mechanico-technical department—Mathematics.—During the first semester five hours a week; during the second, two hours; review of the former exercises; instructions on curves; the “degrees of flatness;” conic sections; cyclical curves; the spirals; every fortnight home work on mathematics or mechanics.

Mechanics.—Four hours in the first semester and seven hours in the second, weekly; resolution and composition of forces in space; the common conditions of equilibrium for free and supported objects; repetition and extension of the elements of hardness; dynamics of solid objects; elements of shock.

Construction of machines.—Sixteen hours weekly (four hours lectures and twelve hours drawing). Construction of parts of machines.

Mechanical technology in general.—Four hours lectures and two hours drawing, weekly. Technology of iron and wood, with special regard to machinery and tools; drawing after sketches and drawing of tools; machines for tools.

Chemical technology.—Two hours a week, together with the architectural department. Technology of clay; class of gypsum and plaster; principles of the distillery, brewery, and sugar manufactory; lectures to students of the textile branch of the mechanical department on heating, lighting, and the chemistry of fabrics; elements of dyeing and printing; plaster materials; varnish and cement.

ARCHITECTURAL DEPARTMENT.

Architecture.—Fifteen hours a week (four hours lectures, eleven hours drawing). Continuation of instruction in the construction of building, including all those works which are necessary for constructing a building, *i. e.*, groundwork, the work of the mason, carpenter, tile-layer, tinsmith, and locksmith, building materials, etc.

Building mechanics.—Four hours a week. Revolution and composition of forces; theory of weights and hardness, and their use in building; mechanical work; the windlass.

Architectural etymology.—Six hours a week. Explanations as to pillars; shape of moldings in general; socle, brace, parapet, and main moldings; profile of door and window frames, using the shadow in drawing; directions for whole façades.

Chemical technology.—Two hours weekly, together with the mechanico-technical department.

Free-hand drawing.—Six hours a week. Drawing from plaster casts; etymology, with special regard to ornamental work for architectural decorations; drawing with the pen.

CHEMICO-TECHNICAL DEPARTMENT.

Chemistry in general.—Eight hours a week during first semester. Inorganic chemistry, with the scientific foundation of chemical theories; completion of the instruction given in the second annual course by the discussion of the rarer elements and chemical combinations the knowledge of which is necessary.

Technical chemistry and chemical technology.—Eight hours a week. Natural waters: Examination and purification of the same in large quantities; extraction of the various chemical products, as metalloids, acids, salts; manufacture of gunpowder; technology of chalk, gypsum, and plaster; manufacture of glass and earthenware; fuel and firing.

Practical exercises in the chemical laboratory.—Twenty hours a week. Lectures on analytical chemistry, including qualitative analysis; chemical preparations, and the demonstration of easy quantitative laws.

Mechanics.—Two hours a week. Geodynamics; balance and the movement of fluids and gases.

Knowledge of machines.—Three hours a week. Explanation of appliances used for calculating and measuring purposes; necessary instruction regarding their construction; explanation and construction of the most important parts of a machine.

FOURTH ANNUAL COURSE FOR ALL DEPARTMENTS.

German language.—Two hours weekly. Reading of dramatic poetry, with brief instruction as to its development; view of the development of literature; written exercises, discourses, etc.

History and geography.—Three hours weekly. History of modern times, since the Westphalian peace, with special regard to the progress of culture; view of the present European condition of culture and methods of traffic; outlines of the Austrian constitution and administration.

MECHANICO-TECHNICAL DEPARTMENT.

Theoretical and practical mechanics.—Eight hours weekly in the first semester, seven hours in the second. Mechanical communications and the most used mechanisms; hydraulics; theories of water motors, pumps, and ventilators; mechanical theory of heat, with reference to gas and steam; theory of the steam-engine and of caloric machines; school and home exercises.

Machine building.—Seven hours weekly in the first semester and eight in the second. Construction of pulleys, windlasses, presses, pumps, water-wheels, turbines, etc.; of steam-boilers, engines, gas-receivers, steam steering, etc.; the most facts relating to the construction of tool machines.

Mechanical drawing.—Eleven hours weekly. Construction of connecting parts of machines; construction of machines after given sketches.

Special mechanical technology.—Four hours a week; also lectures for those students of the chemico-technical branch of the textile industry. Spinning and weaving, with regard to the construction of the respective machines; finishing machines; paper manufacturing. Students of the mechanico-technical department have also two hours weekly of technological drawing, in which drawing and sketching of the respective machines are included.

Agriculture and drawing.—Two hours weekly, together with the chemico-technical department.

Surveying.—Two hours weekly in the first semester. The most important measuring and leveling instruments; practical exercises.

ARCHITECTURAL DEPARTMENT.

Architecture.—Twenty-four hours weekly in the first semester and twenty in the second. Lecture, with exercise in sketching, six hours a week; inside house finishing, joiners', locksmiths', painters', glaziers', potters', paper-hangers', gilders', sculptors', and tile-layers' work; heating, etc.; water, gas, and telegraph; water-closets and drains; iron building construction. Specifications; building contracts; explanation

Style of buildings. — Two hours a week. The special signs of style in regard to the ornamental and construction details, as the oriental style, Greek and Roman style, with their most important monuments; characteristics of the Byzantine and Mohammedan style of building; the Roman and particularly the gothic style of architecture; explanation of the Italian renaissance and that of other countries; short study of the best buildings of the eighteenth and nineteenth century.

Building mechanics. — Two hours a week. Continuation and conclusion of the third year course.

Surveying. — Four hours a week in the second semester. Explanation of the most used measuring and leveling instruments; practical exercises in laying out and leveling.

Free-hand drawing. — Six hours a week. Drawing and sketching of ornamental details of buildings in full size, with the aid of plastic sketches.

CHEMICO-TECHNICAL DEPARTMENT.

Technical chemistry and chemical technology. — Six hours weekly. Metallurgy; metal preparations in colors; Organic dye-stuffs and colors; dyeing, printing, and bleaching; agriculture; visits to manufactories and workshops.

Practical exercise in chemical laboratory. — Twenty-two hours weekly. Continuation and conclusion of third annual course.

Knowledge of machines. — Three hours a week. Use of motors and measurement of water-power; description and explanation of vertical and horizontal water-wheels and those for a column of water; the use of steam power; production of steam; description and explanation of steam-engines.

Mechanical technology. — Four hours weekly, together with the mechanico-technical department of the third and fourth annual course.

Architecture. — Two hours a week, together with the mechanico-technical department.

FREE BRANCHES OF INSTRUCTION.

Stone-cutting. — In the winter semester three hours weekly for scholars of the third and fourth annual course of the architectural department.

Modelling in clay, gypsum, wood, and stone three hours a week.

Book-keeping, office work, and correspondence. — The most important questions on bills and the rights of exchange.

Plan of instruction of the special course in theoretical and practical weaving. This course is for those students of the mechanico-technical department who devote themselves to the textile industry, and comprises the following courses:

Theory of weaving. — Three hours weekly in the third annual course and one hour in the first semester of the fourth annual course. The three principal kinds of bindings for cotton, worsted, and carded yarn weavings; composition of cotton, woolen, and mixed weavings; stitched goods; yarn calculations.

Practice of hand weaving. — Two hours weekly in the third and fourth yearly course. Working on hand looms with treadles, shaft, and jacquard machines.

Theory of mechanical weaving. — One hour a week in the first semester of the fourth annual course. Principle of the hand loom; theory of the bindings; mechanism of the loom; the instruction is combined with that of mechanical technology.

Practice of mechanical weaving. — Two hours a week in the fourth annual course. Weaving on different mechanical looms; construction and taking apart of such looms.

PLAN OF INSTRUCTION OF THE WORKMASTERS' SCHOOL.

Mechanico-industrial department. — First semester.

German language. — Four hours a week.

Geography.—One hour weekly. Classification of the surface of the earth; the different governments of Europe; topography and conditions of culture of the most important states, especially of Austro-Hungary.

Calculating.—Six hours a week. Calculating with whole numbers and fractions, both decimal and vulgar; extraction of square and cube roots; instruction regarding simple and combined rules of proportions; school and home work.

Geometry.—Five hours a week. Plane geometry.

Projections.—Eight hours weekly and continued in the second semester. Exercises in geometrical drawing, projections of lines, surfaces of objects, sections and penetrations, shadow constructions.

Free-hand drawing.—Eight hours a week.

Natural science.—Four hours a week. The most important physical lessons; lessons on mechanics, heat, sound, light, electricity, and magnetism; the most important chemical elements and the combinations which are most used.

Mechanical technology.—Four hours a week. Metal and wood work; tools; tool machines.

SECOND SEMESTER.

German language.—Three hours a week. Continuation of reading and reciting of short poems.

Orthographical exercises.—With consideration of words of foreign origin most used in industrial life.

Office work.—One hour weekly. The most important letters of a tradesman, with explanation of their purpose and the laws relating to them.

Geometry.—Four hours a week. Conclusion of plane geometry; calculation of the size of objects.

Algebra.—Four hours a week. Principal algebraic rules; equations of the first and second degrees.

Natural science.—Four hours a week. Continuation of the first course.

Machines.—Five hours weekly (continuation of the third course). Lifting machines, windlasses, pumps, and ventilators.

Free-hand drawing.—Six hours a week.

Projections.—Eight hours a week. Continuation of first course.

Mechanical drawing.—Six hours weekly. After sketches and models.

THIRD SEMESTER.

German language.—Two hours weekly. Reading and explaining of grammatical specimens, chosen according to the future profession of the scholars; written exercises, especially simple descriptions.

Business letters and industrial book-keeping.—Two hours weekly. Declarations and petitions, with laws relating thereto; principal ideas of bills of exchange; opening and keeping of the most important books, with exercises in entering the principal business matters.

Surveying.—Two hours weekly. The most important surveying and leveling instruments; practical exercises.

Mathematics.—Four hours a week. Lessons in involutions, as far as necessary to understand logarithms; exercise in using logarithms; elements of plane trigonometry.

Mechanics.—Eight hours a week. Mechanics of solid objects.

Mechanical drawing.—Twelve hours weekly. Drawing of parts of machines after given rules.

... weekly: continuation in fourth course. Firing;

FOURTH SEMESTER.

Mechanics.—Ten hours a week. Mechanics of water and gas; laws of Gay-Lussac and Poisson, and the use of same, especially for the mechanics of motors.

Engineering in general.—Three hours a week. Continuation and conclusion of lectures of the third semester.

Special engineering.—Three hours a week. Tool machines; thorough knowledge of machinery, and speed of the same; supply of force.

Special mechanical technology.—Six hours weekly. Continuation and conclusion of the third course.

Mechanical drawing.—Eighteen hours a week. Continuation of drawing of parts of machines; drawing of whole machines after copies. Lectures on engineering include the construction of mills, breweries, distilleries, etc.

WORKMASTERS' SCHOOL FOR THE CHEMICAL TRADE.

FIRST SEMESTER.

German language.—Four hours weekly. Same as in the workmasters' school for the mechanical trade.

Geography.—One hour weekly.

Reckoning.—Six hours weekly. Calculation with whole numbers, common and decimal fractions; extraction of square and cube root; lecture on proportions; simple and combined rules of proportion; school and house work.

Geometry.—Five hours weekly. Plane geometry.

Physics.—Four hours weekly. Lectures; discoursing on mechanics, heat, sound, electricity, and magnetism.

Chemistry in general.—Twelve hours a week. Inorganic chemistry; principal chemical fundamental laws; the more important elements and their combinations with the further consideration of technical chemistry.

Free-hand drawing.—Eight hours weekly. Drawing of simple objects, partly after copies, partly after models; sketching parts of machines, etc.

SECOND SEMESTER.

German language.—Three hours weekly, as in the second course of the mechanical workmasters' school.

Business matters.—One hour weekly, as in the second course of the mechanical workmasters' school.

Algebra.—Four hours a week. Fundamental theorems; equations of first and second degrees.

Geometry.—Four hours a week. Conclusion of plane geometry; calculation of size of objects.

Physics.—Four hours a week. Continuation of lectures of first course.

Chemical technology.—Eight hours a week. Water examination and purification of same for industrial purposes; extraction of various chemical products for manufacturing purposes; fuel and heating; lighting.

Practical studies in the chemical laboratory.—Eleven hours weekly. These include qualitative analysis and some quantitative laws; lessons in analytical chemistry (continuation in third course).

Free-hand drawing.—Four hours a week.

THIRD SEMESTER.

German.—Two hours weekly, as in third course of the mechanical workmasters' school.

Business letters and industrial book-keeping.

Physics.—Four hours weekly. Review, especially of the mechanics of fluids and gases of special importance to professional chemists.

Mineralogy.—Three hours weekly (optional). The most important minerals after the crystallographical; physical and chemical theorems; practical exercises.

Chemical technology.—Six hours weekly. Dyeing substances and dyes; dyeing, printing, bleaching, agriculture, tanning, soap manufacture, etc. Lectures are completed and illustrated by visiting various manufactories.

Practical studies in the laboratory.—Twenty-one hours weekly. Continuation of lectures of the second course; chemical experiments.

Mechanical technology.—Four hours a week, with the students of the chemico-technical department of the high school.

FOURTH SEMESTER.

Physics.—Four hours weekly. Practical exercises.

Mineralogy.—Three hours weekly. Continuation of lectures of the third course; discussion of such subjects as relate to the future professions of the students.

Practical studies in the laboratory.—Twenty-four hours weekly. Examination and explanation of such chemical products as are used in the students prospective profession.

Description of machines.—Three hours a week. Firing; construction of boilers, steam and water motors; pumps, presses, ventilators; motors for retail trades.

Mechanical technology.—Four hours weekly. Continuation of lectures of the third course.

PLAN OF INSTRUCTION OF THE SCHOOL FOR ARCHITECTURE.

FIRST SEMESTER.

German.—Four hours weekly, as in the workmasters' school.

Geography.—One hour weekly, as in the workmasters' school.

Calculations.—Six hours weekly. Calculating with whole numbers, common, and decimal fractions; extraction of square and cube roots; theory of ratio and proportion; school and home work.

Geometry.—Five hours weekly. Plane geometry.

Theorems on projections.—Eight hours a week. Geometrical drawing; projections of lines, flat objects, penetrations; axonometrical projections.

Natural science.—Four hours weekly, together with the mechanical department.

Free-hand drawing.—Eight hours weekly. Elementary free-hand drawing of plastic ornaments; exercises in choosing colors for use on flat surfaces.

Architecture.—Four hours a week. Stone and wood framing.

SECOND SEMESTER.

German language.—Three hours a week, as in the workmasters' school.

Business letters.—One hour a week, as in the workmasters' school.

Geometry.—Four hours a week. Conclusion of plane geometry; calculation of the size of objects.

Projections.—Eight hours weekly. Continuation of the first winter course.

Architecture.—Thirteen hours a week (lectures and drawing). Stone and wood construction; vaults, staircases, ceilings, floors, plastering, roof-supports, and tile-laying.

Architectural etymology.—Two hours a week. Elements of molding.

Free-hand drawing.—Eight hours weekly. Continuation of exercises of the first course; drawing from models especially relating to architecture; sketching.

THIRD SEMESTER.

Algebra.—Four hours weekly. The four elementary rules; equations of the first degree, with one or several unknown quantities; equations of the second degree.

Architecture.—Fifteen hours a week (lectures and drawing). Scaffolding, carpenters', painters', glaziers', and locksmiths' work; heating and ventilation; water-closets and sewers, wells, and fountains.

Architectural etymology.—Six hours a week. Pillars, with special consideration of the Roman style; instructions as to moldings, windows, and doors; making up facades of buildings, and details of same.

Free-hand drawing.—Eight hours a week. Continuation of drawing from models; sketching.

FOURTH SEMESTER.

Building mechanics.—Four hours a week. Important facts on statics and hardness, with special use of graphical methods; calculations as to the size and strength of pillars, arches, vaults, and simple roofing.

Architecture.—Four hours weekly. Iron construction; construction of town and country buildings; specifications; building regulations.

Sketching.—Twenty-one hours weekly. Sketching of town and country buildings after given plans.

Free-hand drawing.—Ten hours weekly. Architectural sketches after copies; drawing details of facades in actual size for use in projected buildings, with the use of copies and models.

In addition to the foregoing schools there is yet a school for the benefit of tradesmen who are obliged to look after their work during the day, but who have elementary knowledge, such as is taught in the public schools. This school is open at night on week days and in the morning on Sundays and holidays. Instruction relates first to the teaching of drawing and modeling, in which each scholar is instructed to copy objects relating to his particular trade. This school is called the

PROGRESSIVE EDUCATIONAL SCHOOL FOR INDUSTRIAL DRAWING AND MODELING.

Instruction is divided into two annual courses. The first teaches —

Free-hand drawing.—Eight hours weekly.

Geometrical drawing and theorems in projection.—Eight hours weekly.

The second annual course includes —

Architectural drawing.—Eight hours weekly.

Drawing for metal workers.—Six hours weekly.

Artistic industrial drawing.—Eight hours weekly.

Modeling.—Four hours weekly.

The school hours on Sundays are from 9 to 12 o'clock a. m., and on two week days from 6.30 to 9 o'clock p. m.

Lectures are also given on such subjects as are especially important to workmen, and which are useful for local needs. Lectures are now given on industrial calculations for adult workmen.

The course lasts seven months each year, from October to May, at the end of which scholars receive a certificate of proficiency, etc. The fee amounts to 2 florins (80 cents). This is reduced to scholars without means.

I have been thus prolix in describing the course of this school.

stitution which has been taken as a model for the establishment of similar schools by the Russian Government, and without details this report would seem to have no practical worth to those interested in the subject.

Last year a teacher in the Philadelphia Industrial School was sent to Europe to visit such institutions in England and on the Continent. He informed me that the *Gewerbe Schule* here was the most thorough one he had seen.

I am told that there are but three industrial schools in the United States, and that they are all small affairs. It requires but little discernment to see what a stimulating effect upon the trade of a country the thorough education of its artisans must have, and it is equally evident that in our wonderful development we should endeavor to lead the world in this, as in no country have the workmen so much ingenuity and practical skill as in the United States, and education only is necessary to enable them to lead in the great race and to supply the earth with manufactures.

Before closing I would also call attention to the Gewerbe Museum here, which, while not connected with the schools referred to, is founded and supported by contributions for the benefit of the manufacturer and artisan. Here are gathered together and arrayed for easy inspection samples of the best manufactures from all lands. Porcelain, glassware, iron and brass work, embroidery, lace, and indeed almost everything that can be used by the artisan as models. Here can the workman cultivate an artistic taste from the best models and make designs to be used in his own business. Many wealthy men take great interest in this museum, and while on voyages of pleasure seldom fail to procure specimens to be donated upon their return to the institution. It would be well for us if some of our manufacturers would allow some of their charity to drift in the same direction. — REICHENBERG, *May 1, 1888.*

JNO. B. HAWES,
Commercial Agent.

FINANCIAL SITUATION OF BRAZIL IN 1887.

In my last annual report, after describing the financial situation at Brazil, which seemed to me to be far from prosperous, I stated that the Government was exerting itself to improve this situation, and expressed the hope that the vast natural resources of the country, united to the patriotism of the people and the statesmanship of its public men, would enable it to pass safely through the difficulties which surrounded it.

which has since come to my knowledge shows that, although the anxiety of

FINANCES.

The deficit for the fiscal year 1884-'85 was somewhat larger than was supposed at the time I prepared my last report, the receipts for that year being \$64,827,919 in United States currency, with exchange at par, and the expenses were \$84,291,873. The deficit then was \$19,463,954, and not \$18,946,813, as I had gathered from official sources. The discrepancy was due to additional returns received at the treasury after my report had been made public.

The enormous territorial extent of this Empire and its imperfect means of communication greatly retard the process of preparing definite balances of public receipts and expenditures.

In the fiscal year 1885-'86 the Government succeeded in reducing the expenses to \$80,878,286, while the receipts rose to \$67,137,286, \$2,307,367 more than the previous year. Owing to this decrease in expenses and increase in revenue the deficit was smaller by \$5,721,983 in 1885-'86 than in 1884-'85, amounting in 1885-'86 to \$13,741,471.

The revenue for the fiscal year 1886-'87 had been estimated in the respective budget at \$69,054,444, but in the estimate presented to Parliament last May the minister of finance expressed the opinion that it would be nearly \$73,000,000, which would be an increase of more than 8 per cent. over that of 1885-'86, more than 12 per cent. over that of 1884-'85, and more than $3\frac{1}{2}$ per cent. over that of 1883-'84, the largest revenue which, up to that date, had ever been collected in Brazil.

Full returns for 1886-'87 have not been made public, but incomplete data which I have been able to gather from various sources indicate that the minister's estimate was not too favorable, for they show an increase of nearly 16 per cent. over the previous year. Should the returns not yet published be as favorable, the revenue for 1886-'87 will amount to about \$77,760,000. The returns thus far published for the half year ending December 31, 1887, are not so favorable.

The Government was authorized to expend, in the year 1886-'87, the sum of \$82,773,999, but in the above-mentioned report the minister of finance stated that the actual expenditure would probably be less. If this has really been the case, and if the increase in the revenue was as great as seems probable, the deficit in 1886-'87 will be less than half what it was in 1884-'85.

For the year 1888 the minister estimated the revenue at \$72,519,354, and asked for authorization to expend \$80,563,217. Parliament, however, voted appropriations to the amount of \$82,868,614, not including expenses to an indefinite amount involved in various legislative enactments. It is probable, then, that the expenditures for 1888 will be at least equal to those of 1884-'85, and that although in the budget voted by Parliament the Government's estimate of the revenue was raised to \$74,733,200, the year will close with a larger deficit than the minister of finance had anticipated. Still, the Government, in spite of the difficulties of many kinds with which it is

In his reports and speeches the minister of finance never fails to insist upon the necessity for retrenchment. While not regarding the situation as desperate, he considers it expedient to avoid measures involving increased expenditures, and recommends a careful revision of public expenditures for the purpose of suppressing the superfluous expenses which, in his opinion, may be found in every department of the Government.

While acknowledging that a great part of the increased expenditure of the country is due to a natural and praiseworthy longing for improvement and progress, he clearly perceives that whatever may be the motive for this expenditure, its result is a permanent deficit leading to excessive taxation, which—as he justly remarks—

Counteracting the beneficial effects of improvements obtained at the cost of the public treasury, retards the development of the country, and to repeated loans which are only excusable when there is derived from them some palpable advantage offering a full and unquestionable compensation for the burdens which they impose.

It is not necessary to employ many words to prove that permanent deficits are injurious; it is sufficient to reflect that constant deficits mean constant loans with a corresponding increase of the national debt and the respective interest. In a few years it becomes necessary to increase the taxes; that is, to increase the cost of living and to handicap our production with burdens which hamper us in competing with other nations.

It is a mistake to suppose that taxes are light in Brazil. It is customary to estimate their burden by dividing the total amount derived from taxation by the whole number of the inhabitants of the country; but it must be remembered that there is an enormous part of the population which pays no taxes, and that the weight of these falls upon a limited number of persons, the producers, who, in my opinion, are at the present time greatly overburdened. Our taxes are now so exorbitant that should there arise any new emergency—a foreign war for instance—it would be extremely difficult to devise means for drawing from our overtaxed production the additional resources which would be required for the necessities of the state.

THE LABOR QUESTION.

The exact result of the general enrollment of the slaves which terminated on March 31 last has not yet been made public; but in view of the almost complete returns which have been published, it is thought that the number of slaves in the Empire does not exceed 650,000; the decrease since 1873, if this estimate be correct, being over 900,000, or more than 60 per cent.

It is evident, therefore, that in a very few years slavery will have entirely ceased to exist in Brazil. During the year which has just closed this question has been constantly agitated, giving rise to heated debates in Parliament and to frequent disturbances in various localities.

During the year 52,620 immigrants have arrived at the different ports of the Empire. This is a much larger number than has ever been received before in any one year. The increase is due principally to the strenuous efforts made by the province of San Paulo to attract immigration. These efforts, which were initiated in 1882, have produced the following results:

After San Paulo, the province which attracts most immigrants is Rio Grande do Sul, which has a large foreign element; colonies having been founded there before (and many others since) the independence of Brazil.

The province of Rio de Janeiro, which has never been very successful in attracting immigration, has recently resolved to make another effort.

In the beginning of November Councillor Paulino do Souza, senator from this province, and one of the most prominent and influential leaders of the conservative party in Brazil, assembled the members of the provincial legislature and laid before them an immigration scheme which it was resolved to adopt. This scheme provides for combining the efforts of the provincial with those of the General Government, which for the year 1888 disposes of an appropriation of \$1,270,000 for promoting immigration, besides a third of the product of the emancipation surtax, which it is calculated will amount to over \$900,000 more. The General Government gives newly-arrived immigrants four days' board and lodging at its immigration depot and pays their passage by railway, river, or sea to the port or station nearest the place of settlement.

To planters who advance to immigrants the money for their passage from Europe, it repays the amount so expended after the immigrant is definitely settled on the plantation, the cost of passage not to exceed 80 millreis (\$43.68) for each adult, 40 millreis (\$21.84) for each child from eight to twelve years old, and 20 millreis (\$10.92) for each child between three and eight. As many planters, for want of ready money, are not prepared to avail themselves of this assistance of the General Government, Councillor Paulino's plan provides that the provincial government shall act as an intermediary, advancing the passage money for the planter and afterwards collecting it from the General Government. It provides also for assisting the planter in receiving the newly-arrived immigrants by paying a premium of 100 millreis (\$54.60) for each of the first 2,000 houses constructed for this purpose. To every Brazilian laborer who immigrates from any other province in the Empire to that of Rio de Janeiro will be given, at the end of two years' residence in this province, a premium amounting to a sum equal to that expended with each foreign immigrant. Another feature of this scheme is the purchase of plantations whose owners, for want of laborers, are not able to cultivate them. These plantations are to be divided into small farms and sold to immigrants who wish to settle as proprietors. It is proposed, moreover, to assist groups of planters in establishing central sugar-mills with machinery for manufacturing cane by the diffusion process. These mills must not cost more than \$163,800 each. The loans made by the province to groups of planters will be secured by mortgage on the mills. To aid the provincial government in executing this programme a central association will be organized with agents in all the parishes of the province. The planter who needs laborers has only to fill up a blank application and hand it to one of these agents, who will forward it to the central association, declaring at the same time

his opinion, the applicant is prepared to receive the laborers and provide for them properly after their arrival.

A bill embodying these ideas was passed by the provincial legislative assembly. It appropriates the sum of \$540,000 for the acquisition of laborers and \$1,620,000 for the promotion of the establishment of sugar-mills. The president of the province has been authorized by the General Government to introduce into the province, in conformity with this scheme, 3,000 families of immigrants. This was not the only measure brought before the provincial assembly in relation to the labor question. There was also introduced into that body a bill against vagrancy.

The bill empowers the municipal authorities to proceed to the enrollment of the inhabitants of their respective districts over eighteen years of age. The person so enrolled must declare his name, age, birthplace, and profession. These particulars, together with a description of his appearance for the purpose of identifying him, will be noted in a small book which he will be required to keep and to exhibit at stated intervals to the municipal and police authorities, proving at the same time that he is engaged in some honest occupation. To enforce this law the municipal authorities may impose fines not exceeding 60 millreis (\$32.36) or sentence to imprisonment for a term of not more than eight days. If the person enrolled fails to prove that he is engaged in some honest occupation he is liable to be prosecuted as a vagrant* in accordance with the provisions of the criminal code of the Empire. Persons possessing property or paying direct taxes are to be exempt from enrollment. Several provisions besides those which have been mentioned are exerting themselves more or less actively to reorganize labor and promote immigration; and the General Government has addressed circulars to the provincial authorities encouraging them in this, and assuring them of its hearty co-operation.

Up to the present, however, it can not be positively asserted that the labor problem has been solved in any of the provinces of the Empire, not even in that of San Paulo, which has certainly made greater progress in this respect than any of the others.

STATE OF TRADE.

"The increase during the past year in the business done by the Bank of Brazil," says the board of supervisors of that bank, "is a noteworthy circumstance, which seems to point to the renewal of commercial activity and to deliverance from the dangers which now environ and threaten trade."

This improvement in the commercial outlook the board attributes to the policy of the present minister of finance of keeping out of the money market—thus interrupting and perhaps permanently abolishing the detrimental practice established and maintained by his predecessors of depriving this market of large sums of money which it can use as it does for its commercial transactions. That baneful

long intervals in which they are absorbed by the state is a double evil which injures commerce, not only by the depletion which it causes, but also, and perhaps even more, by the unhealthy plethora which ensues when the money so absorbed returns to circulation, producing reckless speculation and giving rise to a feverish activity which can not last, because in the normal condition of national wealth there are no elements to sustain it.

Exchange, which in 1886 had been comparatively favorable, continued to be so during the past year, there being no violent fluctuations in the value of the currency, which has generally had an upward tendency. This was due chiefly to the combination of foresight and good fortune, which has enabled the Government to provide for meeting its obligations at home and abroad without disturbing the money market.

The extreme quotations of exchange during the year were $21\frac{1}{2}d.$ and $24d.$ per millreis, the value of the currency now being greater than at any other period since 1880. This increase in the value of the paper currency gives rise to many conjectures in regard to the probability of a return to specie payments. It is known that the present minister of finance favors this idea, and it has more than once been rumored that he was on the point of contracting a large loan as a preliminary step in this direction. It does not, however, seem probable that he will attempt to resume specie payment until he shall have succeeded in getting rid of the permanent deficit in the budget of the Empire. A bill establishing the American system of national banks was introduced into the senate last year, but no action was taken on it by that body. Such a measure would doubtless be very useful, for, although it could not give the currency a fixed and tangible value, it would probably give it the necessary elasticity, for want of which the amount now in circulation sometimes seems excessive and at others insufficient.

A recent legislative enactment of special importance to persons interested in trade with this country is the new law on trade-marks voted last year by Parliament. The benefits of this law are extended to foreign trade-marks, if there is a treaty to this effect between Brazil and the respective country, it being necessary, however, to deposit at the office of the board of trade of this city the competent model and certificate of registry, and to have this certificate and a description of the trade-mark published in the official papers of the Empire.

In the latter part of the year trade was favorably affected by the repeal of the general export duty on sugar. In my last annual report I alluded to the precarious situation of the sugar industry of this country. In my dispatch No. 91 I informed the Department of the organization of an association in this city for the purpose of defending the interests of that industry. To the efforts of that association and to those of the representatives of the province of Pernambuco in the Brazilian Parliament the repeal of the duty is chiefly due. It is only just, however, to add that the measure is in accord with the views of the present minister of finance, who, indeed, favors the total repeal of export duties. He evidently does not consider so general a measure a
fortune at the present time

EXPORT DUTY ON COFFEE.

Before leaving this subject, I take occasion to correct an error which prevails in the United States in relation to the export duty on coffee. It is constantly asserted there, both by the press and by our public men, that this tax was laid on the article after the repeal of the import duty by the United States, and that, consequently, the American consumer gained nothing by the removal of this burden. The assertion is entirely unfounded. The policy of taxing exports prevailed during the time when this country was under Portuguese rule, and has continued ever since. In 1853 the export duty on coffee was 5 per cent. In 1856 it was raised to 7 per cent., but in 1859 it was reduced to the previous rate. In 1860 it was again raised to 7 per cent., and in 1867 to 9 per cent. After that there was no alteration in this duty until 1882, when it was reduced to 7 per cent. Thus it will be seen that since the repeal of import duty by the United States on coffee the Brazilian export duty has been altered only once, and that, then, far from being increased as is generally supposed in the United States, it was considerably reduced. As an offset to the repeal of the duty on sugar, I have to record the increase of duties on nearly all kinds of merchandise, resulting from the revision of the custom-house tariff, which was authorized by Parliament in 1886. This increase of duties in the revised tariff (which went into operation on the 1st of July last) has already had an unfavorable effect on trade, and will, doubtless, affect it still more unfavorably in the future.

COFFEE.

What principally regulates the trade at Rio de Janeiro is its coffee market, though this is affected in its turn by many circumstances, both general and special. It is on the product of the sale of coffee that the people in Rio de Janeiro and of the dependent districts rely almost exclusively to obtain means to pay for what they import. The importance of the coffee trade of this port may be comprehended when I state that in the fiscal year 1886-'87 the value of the coffee shipped from here to foreign countries amounted to nearly 97 per cent. of that of all the merchandise so exported. In regard to the quantity of coffee handled in this market, the past year has not been favorable, as may be seen by the following statement, comparing the receipts, sales, and shipments of this year with the average for the five preceding years:

	1887.	Average, five preceding years.
	<i>Bags.</i>	<i>Bags.</i>
Receipts.....	2,227,036	3,907,832
Sales	2,254,262	3,889,743
	2,241,755	3,908,018

mated by some persons at 4,200,000 bags, amounted in reality to only 3,500,235 bags. Of that of 1887-'88 only 956,523 bags were received in this market in the first six months of the crop year, it being estimated that there were about 1,000,000 bags in the interior, so that the crop is probably less than 2,000,000 bags. And yet some persons estimated this crop as high as 2,750,000 bags. As to prices, they were high throughout the year, the extreme quotations for 1887 being $9\frac{1}{2}$ and 22 cents per pound, against 3 and $15\frac{1}{4}$ cents in the five preceding years. The sudden decline in prices in the New York coffee market last June had a very paralyzing effect on the coffee business here. For four months there was scarcely any business done, the total sales during that time amounting to only 315,771 bags, or less than is sometimes sold here in a single week.

On the whole, while the first half of the year was not altogether unfavorable to trade, business in the latter half has certainly not been good. The coffee shipment during the year was distributed as follows:

UNITED STATES:

New York.....	1,138,735	
Baltimore.....	173,127	
New Orleans.....	124,761	
Galveston.....	6,000	
Newport News.....	1,000	
Not specified.....	2,207	
		1,445,830

EUROPE:

Hamburg.....	159,703	
Havre.....	100,483	
London.....	100,413	
Trieste.....	48,954	
Antwerp.....	48,038	
Marseilles.....	33,514	
Genoa.....	32,422	
Lisbon.....	14,548	
Southampton.....	12,648	
Falmouth.....	10,500	
Bordeaux.....	7,114	
Odessa.....	2,409	
Guttenberg.....	400	
St. Petersburg.....	250	
Opporto.....	118	
Corfu.....	100	
Not specified.....	17,551	
		589,165

River Plate.....	58,065
Cape of Good Hope.....	22,104
Port Natal.....	4,500
Port Elizabeth.....	3,351
Valparaiso.....	775
Brazilian ports.....	
Not specified.....	

The official value of the foreign and coast trade of Rio de Janeiro amounted in the fiscal year 1886-'87 to \$111,275,142, and that of the whole Empire to \$209,057,581 in 1885-'86, against \$206,055,216 in 1884-'85.

FOREIGN TRADE OF BRAZIL.

In the year ending June 30, 1886, the official value of the foreign trade of this Empire amounted to \$155,026,480 against \$153,786,266 in the previous year. That of Rio de Janeiro amounted to \$93,881,234 in the fiscal year 1886-'87, against \$86,665,370 in 1885-'86 and \$75,113,725 in 1884-'85. The following table shows the official value of the trade in this port in 1886-'87 with each of the countries mentioned therein:

Official value of the foreign trade of this port during the year 1886-'87.

Countries.	Exportation from Rio de Janeiro.	Importation into Rio de Janeiro.	Total.
Argentine Republic	\$1,121,407.01	\$1,367,842.47	\$2,489,249.48
Austria.....	2,128,182.84	84,957.83	2,213,140.82
Belgium.....	1,156,024.32	2,577,932.06	3,733,956.38
Cape of Good Hope.....	308,680.64	.....	308,680.64
Cape Verde Islands	216.26	100,955.80	101,172.06
Channel.....	571,543.54	.....	571,543.54
Chili	9,571.92	59,333.12	68,905.10
France	3,649,386.94	5,649,539.79	9,298,926.73
Germany.....	6,122,333.69	5,720,796.38	11,843,130.07
Great Britain.....	4,014,310.94	19,253,445.74	23,267,756.68
Holland	2,560.80	41,484.08	44,044.88
Indo-China ..	.....	445,544.00	445,544.00
Italy.....	669,582.36	434,334.71	1,103,917.07
New Britain .....	.....	299,181.26	299,181.26
New Zealand.....	1,161.60	41,484.08	42,645.68
Portugal.....	683,326.09	3,037,835.74	3,721,161.83
Russia	27,726.60	15,650.80	43,377.40
Spain.....	108,741.42	19,245.60	127,986.02
Sweden.....	8,968.08	145,472.80	154,440.88
United States.....	27,681,223.86	3,891,869.92	31,573,093.78
Uruguay	343,966.35	2,033,382.84	2,377,349.19
Other countries	11,731.85	28,064.52	39,796.37
Total.....	48,630,647.26	45,250,586.98	93,881,234.24

On comparing this table with that in relation to the year 1885-'86* it will be seen that there was an increase of \$7,265,863.89 in the trade of this port with foreign countries. This increase was partly due to goods imported in the first six months of 1887 for the purpose of avoiding the heavier duties of the revised tariff which went into operation on July 1.

In the dry-goods trade there was a considerable increase, as is shown in the following statement of the quantities and values of the imports in the two

Weight in pounds.

	1885-'86.	1886-'87.
Cotton fabrics.....	16,817,785	19,381,490
Linen fabrics.....	8,890,152	7,242,950
Silk fabrics.....	120,650	158,725
Woolen fabrics.....	3,500,735	4,553,932
Total.....	29,329,322	31,337,097

Official value.

	1885-'86.	1886-'87.
Cotton fabrics	\$10,077,565	\$11,621,382
Linen fabrics.....	1,420,978	1,401,108
Silk fabrics	705,772	952,822
Woolen fabrics.....	3,034,676	3,624,390
Total	15,239,032	17,599,702

In the last six months of 1887 there was a considerable decrease in this trade, there being imported only 24,576 packages of dry goods against 30,306 in the corresponding period of 1886.

The most notable exception to the general improvement in trade in the fiscal year 1886-'87, compared with that of 1885-'86, was the dried-beef trade. In the former there were imported only 29,109,620 pounds against 74,687,989 in the previous year. The decrease was due to the interruption of trade by the cholera in the River Plate countries. The effect of that epidemic on the trade between Brazil and those countries is shown by the following statement:

Exports from Rio de Janeiro to the River Plate.

	1885-'86.	1886-'87.
Argentine Republic.....	\$797,042.86	\$1,121,407.01
Uruguay	433,656.02	343,966.35
Total.....	1,230,698.88	1,465,373.36

Imports into Rio de Janeiro from the River Plate.

	1885-'86.	1886-'87.
Argentine Republic.....	\$2,474,826.07	\$1,367,842.47
Uruguay.....	4,993,985.29	2,033,382.84
Total.....	7,468,811.36	3,401,225.31

Total trade between Rio de Janeiro and the River Plate.

Argentine Republic, 1885-'86.....	\$3,266,873.93	
Uruguay, 1885-'86.....	5,427,641.31	
		\$8,694,515.24
Argentine Republic, 1886-'87.....	\$2,489,249.48	
Uruguay, 1886-'87.....	2,377,349.19	
		4,866,598.67
Decrease in 1886-'87.....		3,827,916.57

There was a marked increase in the trade between Rio de Janeiro and Germany, due to the systematic way in which the German

There was also a considerable increase in the trade with Italy, a natural consequence of the Italian immigration which is now flowing into Brazil. "Intervisiting," as suggested in my last annual report, "is a wonderful promoter of commercial as well as social relations."

TRADE BETWEEN BRAZIL AND THE UNITED STATES.

I am glad to see that, according to the table which I give above, there was some increase in the trade between this port and the United States. In the year 1886-'87, compared with the previous year, the exports from Rio de Janeiro to our country increased \$937,460, or a little over $3\frac{1}{2}$ per cent., and the imports received here from the United States \$746,006, or nearly 24 per cent. The increase on imports and exports was \$1,683,466, or over $5\frac{1}{2}$ per cent.

It is probable that for the fiscal year ending June 30 next the showing will not be so favorable. The information which I have been able to collect in regard to the last six months of 1887 indicates a decrease in American merchandise. This I attribute to the elevation of duties and to the decrease of the purchasing power of the consumers. All the foreign trade of this market is suffering from the same causes.

In the calendar year of 1887 there were no importations of American butter. This fact is a striking example of the detriment caused to the foreign trade of the United States by the want of facilities for conducting it properly. Were those facilities such as they should be the entire butter trade of this market, amounting to more than \$500,000 per annum, would, I have no doubt, be under American control.

In the flour market here we continue to hold our own. In this we were favored last year by the cholera in the River Plate countries, which are our principal competitors in this trade.

The consumption of imported flour amounted in the year 1887 to 414,413 barrels, against 428,741 in 1886 and 397,836 in 1885.

In the fiscal year 1886-'87 there were imported 441,883 barrels, valued at \$1,629,438, against 425,763 barrels, valued at \$1,705,181, in 1885-'86.

In the calendar year of 1887 there were imported 420,305 barrels, of which 328,804 were from the United States. The following is a comparative statement of the different classes of flour imported from the United States in 1887 compared with 1886:

	1886.	1887.
Baltimore, barrels.....	227,624	249,216
Richmond, barrels.....	44,875	37,735
Western interior, barrels.....	35,126	41,853
Total.....	307,625	328,804

Total.....

The extreme quotations per barrel were as follows:

1886. 1887.

These quotations indicate that Western flour suffered last from the decline in prices. From the River Plate there were imported 63,871 barrels of flour in 1887 against 70,101 in the previous year. This article was quoted at from \$3.52 to \$6.82 per barrel. Comparing these quotations with those of American flour, we find a difference in favor of the latter of \$1.32 per barrel for the lowest grades and 88 cents for the highest.

Of the quantity of flour made in this city, an estimate may be formed from the statement that 6,581,923 pounds of wheat were imported in 1885 and 7,641,700 in 1886-'87. I am glad to see that considerable interest was excited in the United States by the news of the organization of a company to establish new flour-mills in this city, as this interest, it is to be hoped, may lead to some systematic effort to promote the development of commercial relations between Brazil and the United States.

I do not, however, apprehend much injury to our flour trade from the organization of that company, and in this view of the matter I am governed by the following reasons:

1. It is very doubtful whether the enterprise will pay. The establishment of these mills involve, in my opinion, a much larger outlay than the founders of the enterprise suppose. In order to obtain a reasonable interest on the capital which will have to be invested, the company will have to sell its flour at prices which will enable us to compete with it successfully in this market. In this competition we are favored by the great advantage of having other markets at our disposal while the company will be restricted to this.

2. It is probable that the cost of manufacturing will be greater here than in the United States. It is true that wheat is nominally admitted free of duty, but in reality it is subject to a charge, called *expediente*, of 5 per cent. ad valorem. Thus the 7,641,700 pounds of wheat imported in 1886-'87 paid to the custom-house the sum of \$3,056.68, or 4 cents per 100 pounds. Labor, indeed, is cheaper than in the United States, but it is very much less efficient, and all other expenses are greater. The duty on flour, which was not changed in the last revision of the tariff, is light, amounting at the present rate of exchange to about 30 cents per 100 pounds. Another circumstance which favors the American manufacturer is that he finds a ready market for all the subsidiary products obtained from wheat in converting it into flour, while this is not the case in Brazil.

3. It is not probable that so good an article will be made here as that which comes from the United States. It is a noteworthy fact, as will be seen by the quotations which I give in another place, that our flour sells for from 10 to 25 per cent. more than that of the River Plate, which is probably quite as good as the article which will be manufactured in this city.

4. The establishment of a line of steamers between Brazil and New Orleans, and the concession of liberal Government aid to it and to the New York line in the shape of compensation for carrying the mails, will enable them to transport flour to this market at nominal rates.

5. Greater advantages can, I think, be obtained for our flour, and, indeed, for our merchandise in general, by means of a commercial treaty. The importance of the United States as a market for Brazilian coffee and as a probable market for Brazilian sugar places a powerful lever in our hands for negotiation of a treaty for commercial purposes.

6. If, in spite of all the circumstances I have mentioned in favor of American flour, it should be found profitable to manufacture the article here, there is nothing to prevent our mill-owners, whose interests are threatened, from establishing mills themselves in this place and competing with any others which may be established here. If an evolution in trade (which, as I have said, does not at present seem to me at all probable) makes it more advantageous for us to manufacture one of our products here than at home, it does not necessarily follow that we will be losers by the change.

This subject is frequently discussed as if the Brazilian Government discriminated against American flour in favor of River Plate wheat. This is not the case. Whatever may be the origin of the two articles they are subject to the custom-house, which I have already mentioned, and it is a significant fact that in the recent revision of the tariff no change whatever was made in this respect.

Should any discrimination be made hereafter, it is not likely that it will be against us, for on the one hand there is considerable rivalry between Brazil and the River Plate, and on the other our country's importance as a coffee market and possible sugar market for Brazil gives us, as I have said, a valuable base of operations for commercial diplomacy.

In the trade between Rio de Janeiro and the United States the American product next in importance to flour is kerosene. Of this article there were imported 3,419,220 gallons, valued at \$768,478, in 1886-'87, against 2,514,670 gallons, valued at \$626,262, in 1885-'86. The last half year of 1887 was not so favorable to this trade, the imports being only 969,220 gallons, against 2,167,540 in the corresponding period of 1886 and 1,014,860 in that of 1885.

The decrease is probably due to several causes. Gas has become cheaper since the works were transferred to a new company; the duty on kerosene was elevated in the last revision of the tariff, and the purchasing power of the consumer has diminished.

The extreme quotations were \$2.32 and \$2.81 per case of 10 gallons in 1887 against \$2.76 and \$3.25 in 1886.

In the year 1886-'87, compared with that of 1885-'86, there was a slight decrease in the importation of American lard, the amount received being 2,386,406 pounds, valued at \$286,575, against 2,514,670 pounds, valued at \$296,541. In the last six months of 1887 the decrease was still greater, there being imported only 21,700 kegs against 32,929 in the same period of 1886.
 55 1/2 cents against 14 and 16 3/4

In the fiscal year of 1886-'87 there was imported from the United States pine to the official value of \$281,120. In the calendar year of 1887 the importation of American pitch pine was more than double that of the previous year, amounting to 16,175,061 feet against 7,757,069 feet in 1886. The total importation of American pine in 1887 was 19,154,144 feet against 11,055,490 feet in 1886.

The quotations varied as follows :

	1886.	1887.
Pitch pine, per dozen.....	\$16.65 to \$19.12	\$7.92 to \$17.60
Spruce pine, per dozen.....	17.12 to 17.34	7.92 to 11.88
White pine, per foot.....	4¼ to 5 cents.	4½ to 5½ cents.

In the fiscal year of 1886-'87 the importation of hardware, machinery, mathematical and surgical instruments, and various kinds of iron and steel goods from the United States amounted to \$256,445. In the same year the importation of dry goods from the United States was as follows:

Cotton fabrics	\$224,953.52
Linen fabrics.....	4,513.08
Silk fabrics	18,713.38
Woolen fabrics	791.80

In the same year Rio de Janeiro imported from our country—

Drugs and chemicals	\$30,659.20
Clocks and watches	26,667.52
Paper goods	26,329.26
Miscellaneous merchandise	251,721.16

It also imported 4,781,900 pounds of resin, valued at \$47,819, and 457,936 pounds of turpentine, valued at \$36,640. In the calendar year of 1887 there were imported 4,790 barrels of resin, against 15,287 in 1886, and 4,754 cases of turpentine, against 5,641 in 1886.

The extreme quotations for rosin were \$2.42 and \$5.06 per barrel in 1887 against \$2.47 and \$5.17 in the previous year. For turpentine they were 7¼ and 9 cents per pound against 8½ and 11½ cents.

According to the records of this consulate-general, the table on the following page shows the exports from Rio de Janeiro to the United States and the number and tonnage of the American vessels engaged in trade with Rio de Janeiro during the year 1887.

The Brazilian Government has renewed its contract with the New York line of steamers, granting it a slightly diminished subsidy, for a further term of ten years. I am also glad to learn that a company has been organized in New Orleans for the establishment of a line of steamers between that port and Brazil.—RIO DE JANEIRO, *April 2, 1888.*

H. CLAY ARMSTRONG,
Consul-General.

BURNLEY SELF-HELP SPINNING AND MANUFACTURING SOCIETY, LIMITED.

One of the most hopeful auguries of a bright future is the spirit of self-reliance and self-help evinced by the British working classes. With education making rapid strides, combined with the good, old common sense and application to hard work which has helped them over so many dark corners in the past, it seems the working classes of England are quietly mapping out, in patient, peaceful labor, the way to a brighter era, at a time when the pessimists see but anarchism, communism, or at the best socialism, as a delivery from evils which in their eyes are worse even than these proposed remedies. Much as may be said in condemnation of the evils proclaimed against, and much justifiable unrest as they may create, yet it must be conceded that the improvements in the condition of the working classes, of which the past fifty years bear witness, are great, indeed, measured by every standard we may apply. It can not be denied that much of this progress is due to their enfranchisement, by which they were enabled to exercise, themselves, that healthful influence in the shaping of their own conditions, that so many great measures of reform have been carried in the period immediately behind us, and that others will be surely carried to a much greater extent in the immediate future. As one of the evidences of their self-reliance, and as an indication of the success of the means adopted by them for bettering their condition, it is only necessary to point to the co-operative stores of the Rochdale Pioneers and of others since organized, and in existence, all over the Kingdom. Their history is well known. Their annual turnover amounts to tens of millions of pounds. In 1884 the sales of all the co-operative stores of the United Kingdom amounted to £30,424,101, or about \$150,000,000. They will now be near £35,000,000, or \$175,000,000, if only the same aggregate of increase be added which has taken place during the four years previous to 1884. The net profits in 1884 amounted to £2,723,794, or \$14,000,000. The membership was 897,950, and may be estimated at a round million at the present time.

These co-operative societies save considerable money to the working classes, both directly and indirectly. Directly by supplying the working classes with pure, unadulterated supplies, in quantities to suit their means, at wholesale prices; and indirectly, in forcing the small retail trader to conform to the standard of supplies and of prices held up by these co-operative distributors. One of the great steps forward marked out by these co-operative stores, however, is that they gradually become co-operative producers, and although they do not give the working people the profit of the work sold, as in purely co-operative production, but manufacture only for the supply of their own members with better and truly cheaper articles, yet by their successful operations they have done not a little to give an impulse to co-operative manufacture.

ing the co-operative concern. One of these, in a very prosperous condition, I visited in Burnley. The society was organized in January, 1886, and commenced working operations in September of that year, thus being actively at work now a little over a year and a half. The success of this concern has now been the cause that one other co-operative society is about starting, with two more organized and preparing to soon commence work.

The prospectus and the brief sketch of their starting operations are so instructive that in place of transcription it will be best to report them in full:

This society has been formed for the purpose of manufacturing prints, Madapollam long cloths, shirtings, twills, jeanettes, and other cotton fabrics. Their aims are the emancipation of labor, and this they are proposing to do by making labor responsible for the results of its own working. In this their principle differs from previous efforts that have been made to solve the labor problem—their principle being that all workers in the concern shall be shareholders, the shares to be of the value of £5 each, and that no interest (or bonus, if any accrue to them) shall be paid to any working shareholder in cash until he or she has four £5 shares standing to their credit in the books of the society, but that it shall be added to their share account until such sums stand to their credit. They pay the Burnley standard list of wages to all employed. Interest is paid to capital at the rate of £5 per cent. per annum—the workers taking this responsibility on their shoulders, making it a first charge on the society—each worker agreeing that if the profits will not bear the interest charges to meet them from their wages. Thus the workers take the risk of the capital of non-working shareholders in the concern, if any profits remain after interest charges have been met. They depreciate machinery at the rate of $7\frac{1}{2}$ per cent. per annum—providing that any profit remains after this they say that a portion, not exceeding three-fifths, shall be carried to a reserve fund, to be used also as a wage-balance fund, and the remainder is allotted to the workers, in proportion to his or her earnings for the period for which the profit is declared.

The soundness of the principle under which they start is especially worth noting. “Their aims are the emancipation of labor, and this they are proposing to do by making labor responsible for the result of its own working. In this their principle differs from previous efforts that have been made to solve the labor problem—their principle being that all workers in the concern shall be shareholders.”

It is a matter of note that many co-operative productive concerns have missed their aim by gradually working into a shareholders' company, employing hired help and appropriating the profits to their own benefit. By employing only shareholders, Burnley self-help people make everybody working for the concern an interested party in the success of the whole body. The clause by which the profits due are added to the shareholder's credit, compulsorily, until his share capital shall amount to four shares of £5 each, makes it possible to the impecunious even to become a shareholder to the full amount, whence he can draw interest and profit in cash, without even drawing from his wages, which are those ruling in Burnley and are paid weekly in cash.

A résumé of the working operations of the first half year, and of the

HOW THE SOCIETY STANDS AT THE PRESENT TIME.

We first commenced operations in January, 1886, holding several public meetings, at which (through the kindness of the central board) some of the members of the central co-operative board were present as speakers, and to give us their advice. We proposed to raise £5,000 in shares of £5 each, fixing Monday, the 15th of March, 1886, as the day on which the share list should be closed. A provisional committee had been formed, all of whom had a practical knowledge of the trade, every branch of the trade being represented on the committee, from managers to weavers. The principle of three-fourths of the Burnley manufacturers being to rent and not to own the mills in which they carried on their business, the provisional committee set about securing a mill on these conditions—the landlord to find room and power to turn the machinery; the society, as lessees, to find the machinery and other plant. To solve this question in a practical manner it was their intention to face the *open market*. Their next point was to so plan the concern that no machine or labor should be wasted, and to place the society in that position that it should be able to use everything to the best advantage, and that it should be able to compete with any firm in the trade. After several consultations a mill was taken from J. S. Grimshawe, esq., centrally situated, bounded on one side by the Leeds and Liverpool Canal, with good roads to it near the Lancashire and Yorkshire railway station, on very advantageous terms, the basis being the lessor to find room and power to turn 400 looms, at the rate of 36s. per loom per annum; the lessor further agreeing that if the society could see its way to put in 600 looms that the rent should be reduced to 35s. per annum. The lessor also further agreeing to lend the society £1,000 at 5 per cent. interest, to be paid back one £500 in 13 annual installments, principal and interest, the other £500 to be paid back at the option of the lessor when the paid up share capital of the society reached £6,000. Thus it will easily be seen that practically this £1,000 loan is as good as share capital to the society. The rent for room and power for tapping, winding, and beaming is £75 per annum, which the society are confident in saying is as cheap as any room and power that has ever been taken in Burnley before. The rooms are lofty and well built, with a splendid pair of engines, 1,000 indicated horse-power motive force, sufficient to turn 2,500 looms, with plenty of room to extend the premises if capital should be forthcoming. The capital of the society at the present time is, shares, £3,700; loan, £2,100; reserve fund, £470, which increases every week. On an average the share capital increases from the workers alone £20 a week. Twelve hundred and sixty pounds sterling of the share capital has been subscribed by 11 co-operative societies; £1,400 by the workers, and the remainder by individuals. The loans are principally from the workers or their relations. We have at work 388 looms, with all the necessary preparation machinery, which finds employment for 72 males, 50 females, and 44 young persons (with the exception of some few minors), all shareholders. The machinery is at full work, with plenty of orders, and with very fair prospects of making a good return for money invested. After six months' working (we having issued our first balance sheet on March 26) we had a very favorable report to issue to our shareholders, as after meeting all interest, depreciation, and other charges we had a net profit remaining of £692 os. 6½d. Of this amount we decided to write off the whole of the formation expenses; to pay a dividend to labor at the rate of 5 per cent. on all wages earned, and carried the balance, amounting to £470, to reserve fund. With such results from the first half-year's working, we have confidence in recommending our society to all persons who have money to invest as a safe and profitable investment, combining in itself two things. In the first place, *true philanthropy*, by helping and encouraging the masses of the people to help themselves; and in the second place insuring that the management of the concern is in the hands of practical men, well versed in all the branches of the trade. Each shareholder has one vote, and no proxy voting; societies who may become members to have the right to appoint a deputy to vote for them, who, so long as he may continue their deputy, shall enjoy all the rights and privileges which appertain to any shareholder. Application

offices, Healey Royd Mills, on Mondays, Wednesdays, and Saturdays from 2 to 6 p. m. Any information which may be required will be gladly forwarded on application to the secretary.

The conditions under which the concern went to work, it will be seen, are eminently favorable. The risks are reduced to a minimum. With honest and fairly able management, of which there can be no doubt under the manner in which it is conducted, this co-operative society must make a profit on its operations so long as any profit can be made at all on cotton cloth by any manufacturing concern.

The power is leased with the buildings, forming part of the rent, as is done by three-fourths of the manufacturers of Burnley, on very favorable terms to the society.

After six months' working the society was able, after meeting all interest, depreciation, and other charges, to show a net profit of £692, or \$3,350. This amount was used to pay off all the formation expense, to pay a dividend to labor of 5 per cent. on all wages earned, and a remainder of £470 was carried to the reserve fund. Now, this dividend, it must be correctly understood, is not paid to the shareholders, but to the worker. The shareholder is paid his 5 per cent. interest, whether a worker or not; the dividend is paid to the worker according to the wages earned. By this means the net results of the worker's exertions are reserved to the worker alone. It is evident that he, receiving alone the results of profitable working and management beyond the share due to capital, of which he himself is part owner, will exercise all his endeavors to bring his own and everybody else's working results to the highest perfection, to watch wastefulness both in labor and materials, and look to and exercise himself a watchful control of the management.

On the other hand, it has been found necessary to clothe the managing director with no small degree of authority over the workers, to guard against the recurrence of what has so frequently proven fatal to many a promising co-operative production concern—the lack of authority in the manager, especially in the control of the workers, all of them being equals in the concern. Many a shiftless worker, not able to find employment in other mills, by taking shares in the co-operative society, for which his friends, to get rid of a drone, perhaps, may have scraped the money together, has thought to make his place secure, to the detriment of other workers and the efficiency of the organization. Experience of this sort has led the board of directors to adopt a resolution by which they clothe the manager with full authority to discharge any worker who is found derelict in his duties or trying to shelter his incapacity or undesirable traits of character behind his rights of a shareholder and member of the self-help society; thus making itself, by the adoption of sound business principles, secure against all dangers from within, more fatal than those possibly to be met with from without, the

SPECIAL RULES—BURNLEY "SELF-HELP" COTTON-SPINNING AND MANUFACTURING SOCIETY, LIMITED.

I. General Rule 3.—The name of this society is the Burnley Self-Help Cotton-Spinning and Manufacturing Society, Limited.

II. General Rule 3.—The special objects of the society is to carry on the trade of cotton spinners and manufacturers, and also that of dealers in cloth and yarn, both wholesale and retail.

III. The registered office of the society is at Healey Royd Mills, Burnley, in the county of Lancaster.

IV. General Rule 22.—(a) The shares shall be of the nominal value of £5 each, payable as to each share required to be held by 10s. on allotment and 10s. per month in the nine calendar months following, or such other sums as the general meetings may determine, with a fine of 10s. on non-payment; and as to any shares not required to be held payable by such installments, as the committee may fix on the issue thereof, respectively. (b) All workers before being entitled to receive (in cash) either interest on shares or any dividend on wages which may accrue to them, shall hold not less than four fully paid-up shares, or such other number as the general meetings may determine from time to time, otherwise their dividend and interest shall be placed to their share accounts. (c) The holders of shares allotted in respect to the profits due as dividends on wages may pay them up by weekly or monthly contributions of not less than 1s. per week, or some multiple thereof, as may be agreed upon by the general meetings from time to time.

V. General Rule 39.—Shares shall not bear interest until they are fully paid up, nor for any part of a calendar month; interest to commence from the first day of the month.

VI. General Rules 57 to 60.—(a) The ordinary business meetings of the society shall be held quarterly, on the second Tuesdays in the months of January and July, and on the second Saturdays in the months of April and October, in each year, at such time and place as the committee may determine, of which due notice shall be given. (b) The accounts shall be made up half-yearly, to the end of March and September in each year, and shall be presented to the ordinary business meetings held in the months following.

VII. General Rules 75 to 80.—(a) The business of the society shall be conducted by a president and eight committeemen. (b) The president to be elected at the January meeting in each year, and two committeemen to retire and two to be elected at each quarterly meeting. (c) Nominations of candidates for the board of management shall be made at the registered office of the society not less than fourteen days before the day of election. (d) Being engaged as a worker by the society shall not be a disqualification from serving on the committee of management.

VIII. General Rule 83.—The quorum of the committee shall be five.

IX. General Rules 90 and 93.—The committee shall have entire control over the business of the society, and shall have power to engage or discharge, from time to time, any persons as secretary or general manager, and may assign to them, if they think fit, the power to engage or discharge any manual worker (subject to rules), and may also assign to them such salaries, duties, and powers as may be deemed expedient, subject to any resolutions of the general meetings relating thereto.

X. General Rule 96.—The seal of the society shall have the device of the clasped hands in the center, with a throstle spindle above and a shuttle below.

XI. General Rules 103 and 104.—At the second ordinary business meeting in each year there shall be appointed from the members of the society two auditors, who shall serve for one year and then retire, but may be eligible for re-election. The general meeting may appoint, in place of the two auditors before mentioned, a public auditor, who shall serve for a like period and be elected in the same manner.

XII. General Rule 114.—(a) The rate of

Machinery and fixtures account.

	£	s.	d.		£	s.	d.	£	s.	d.
To amount expended as per last report..	4,194	5	2	By depreciation previously						
“ additions this half year..	£22	4	7	allowed	228	14	8			
“ less fixtures sold, see				“ depreciation this half						
cash account.....	3	10	0	year at 7½ per cent.						
				per annum	158	5	1			
			18 14 7					386	19	9
				“ balance.....				3,826	0	0
			4,212 19 9					4,212	19	9

Expenses account.

	£	s.	d.		£	s.	d.
To wages	3,901	5	9	By proposition fees.....	1	3	0
“ commission	3	12	0	“ transfer fees.....	0	8	6
“ directors' fees.....	12	0	0	“ tea water sold	10	12	3
“ auditors' “	4	4	0	“ balance to trade account	5,213	19	4
“ stocktakers' fees.....	0	15	0				
“ stocktakers' refreshments... ..	0	6	7				
“ rent and turning.....	444	5	0				
“ insurance	10	14	0				
“ gas and water.....	41	8	11				
“ carriage	214	16	17				
“ gold plate, etc.....	9	18	7				
“ healds, reeds, etc.....	41	2	8½				
“ shuttles	1	18	0				
“ strapping, picking bands, and pick-							
ers	39	2	5				
“ oil and grease.....	39	15	10				
“ brushes, paper, and twine.....	30	16	11½				
“ repairs.....	43	1	3½				
“ traveling.....	23	0	11				
“ printing and stationery.....	8	8	9				
“ stamps and telegrams.....	9	7	6				
“ doctor's fees	3	15	0				
“ Central Co-operation Board's sub-							
scription	1	5	0				
“ exchange tickets	5	1	0				
“ legal expenses.....	10	19	8				
“ sundries	5	0	6				
“ bank commission and check book..	8	6	8				
“ depreciation of machinery, etc.....	158	5	1				
“ interest on share cap-							
ital	£90	9	1				
“ interest on loan cap-							
ital	58	13	10½				
“ interest on bank bal-							
ances	4	6	5				
			153 9 4½				
			5,226 3 1				

Trade account.

	£	s.	d.		£	s.	d.
To stocks last half year.....	3,593	17	2	By cloth sales.....	20,363	19	11
“ yarns and purchases.....	15,098	1	2	“ stock, March 24, 1888.....	3,727	10	0
“ expenses as per expenses account ...	5,213	19	4				
“ net profit.....	185	12	3				
			24,091 9 11				

Reserve fund account.

	£	s.	d.		£	s.	d.
To balance, March 24, 1888.....	663	14	0	By balance last half year	443	12	2½
				“ profit and loss account—undivided			
				profit of last half year.....	219	10	3½
				“ sick weavers' bonus returned.....	0	11	6
					663	14	0
	663	14	0				

Profit and loss account.

	£	s.	d.		£	s.	d.
To bonus on wages credited to share and loan accounts	97	7	7	By balance profit disposable, last half year	309	16	10½
“ interest on share capital.	78	12	3	“ interest on share capital, last half year	78	2	7
“ interest on loan capital... ..	33	9	1	“ interest on loan capital, last half year	40	1	9
	209	8	11	“ errors in balance share accounts.....	0	18	0
“ reserve fund.....	219	10	3½		428	19	2½
	428	19	2½				

Capital account.

	£	s.	d.		£	s.	d.
To 890 shares at £5 each, subscribed.....	4,450	0	0	By stock, yarn, and cloth.	3,727	10	0
“ less amount unpaid.. ..	465	19	3	“ stock, stores, etc.....	105	6	6
	3,984	0	9		3,832	16	6
“ loans	2,330	2	9½	“ machinery and fixtures.....	3,826	0	0
“ accounts owing share interest.....	£90	9	1	“ accounts owing to the society.....	356	12	0
“ accounts owing loan interest.....	51	5	10½	“ cash in bank.....	£801	16	7
	141	14	11½	“ cash in hand	10	11	11
“ accounts owing trade and expenses	1,522	12	3		812	8	6
“ reserve fund.....	663	14	0				
“ net profit (see trade account).....	185	12	3		8,827	17	0
	8,827	17	0				

An examination of the expenses account will show the details of which this general expense account is composed, and at the same time serve in comparison and amplification of the statement in the report on the manufacture of print cloths relating to this item. What concerns us most, however, in a socio-economic sense is the profit share (see profit and loss account), of special importance when we consider the ferment in which the labor world is found at the present time. It is held by socialistic writers that the main cause of the inequality in the conditions of men is that capital—and they are in the habit of taking capitalist and employer as synonymous terms—appropriates the greatest share of the product, and leaves only a small part to the worker. This part of the theorem, if the premises are correct, is unanswerable. The remedy proposed is, the state to assume the function of employer and capitalist, and supply the worker with the machinery, tools, means, etc., whereby to enable him to appropriate all the profits of industry

cised, on the one side; abject poverty and degradation on the side of those who produced this wealth; ignorance on both sides of the true causes which contribute to the welfare of nations—state action alone seemed to be able to cope with these monstrous conditions.

Under conditions superinduced by artificial means, such as protective laws, where combinations for holding up prices are only too fruitful of success, though real wages are not necessarily raised, yet profits are very high, so long at least as counteracting influences have not had time to manifest themselves, there conditions may be created which invite the thoughtless to propose heroic measures, and people will gradually become accustomed to looking to the state as a deliverer from social and economic complications. Under conditions making successful combinations to uphold prices impossible, however, it must be seen, the competition of capital and employer with capital and employer, and the competition of the open market, becomes so intense that profit as well as interest on capital becomes smaller and smaller and the share of labor in production greater and greater.

The half-yearly business amounted to £20,762, or, in round numbers, to \$100,000, an annual turn-over of \$200,000, which may be considered quite a respectable amount of business in goods not amounting to 3 cents a yard, selling value. The yarn purchased amounted to £15,638. Wages amounted to £3,901; other expenses, including rent, supplies, depreciation, etc., £1,172; interest on share and loan capital, £153; a total of £5,226. On this whole amount of business a gross total profit of £493 was realized. Out of this £493 there has been accounted for under depreciation £158; interest on loan and share capital, £149; leaving only a disposable balance of net profit, to be distributed as a dividend to labor, of £186.

A semi-annual dividend of $2\frac{1}{2}$ per cent. was declared, absorbing £97 10s., and the balance, amounting to £88, after allowing £15 for special depreciation on twill motion, leaving £73, was written to the reserve fund, which increased the reserve or wages balance fund to £736 15s. 7d.

The whole net profit, then, which might be taken to stand for the employer's profit, is £186 for the half-year's business, or in round numbers, say, £400, or \$2,000, or 1 per cent. per year on a business of \$200,000. If this sum is distributed among wages, which virtually receives it in this self-help concern either in dividends or as owners of the balance fund, then the annual wages of \$40,000, round numbers, would be benefited 5 per cent., or annual earnings of \$200 raised to \$210, and of \$300 to \$315. Even the interest paid to capital, added to wages, would not raise these more than about \$4 on every \$100 of yearly earnings. But it is never held that capital, either loaned or owned, is to go without a certain compensation. The smaller this compensation the surer the owner of it will be of the safety of his investment. This the organizers of the self-help society have fully established, and the necessity of it recognized in the stipulation that capital shall always be guaranteed its income. If not earned the reserve wages fund

tribution towards interest charges. I do not wish to be understood that I disparage the importance to the laborer of an additional income of \$10 on \$200 earnings. I only wish to illustrate the smallness of the net profits after deducting all indispensable running charges, on which most large industries are conducted now-a-days, as against the exaggerated views commonly held, and probably justifiable, in former days in England.

As an educator of the working classes economically such an enterprise in self-help can not be overestimated. Besides, their incomes are raised, and in proportion they become the sole capital owners; become the recipients of the total gross profit of their business, the capital profit, and the employers' profit. Economy and thrift must be the result. The share capital becomes a kind of savings bank to the operatives. They become their own investors. Already the weekly addition to the share capital from the workers is £20, or £1,000 per annum. From this it will be judged in how short a time the total loan and share capital, held outside, will all be owned by the operatives when they will have actually realized in a small way by self-help and the exercise of good, hard, common sense what is attainable in this world of toil—the full and undivided fruit of their own labor. Even as now situated their condition is an excellent one and fully equal in earnings to that of their brothers and sisters in America.

At the present day (May 3, 1888) the concern has 163 workers employed. These are, as stated to me, 70 men, 36 women, and 57 odd hands and minders. Some 40 of these 57 are young persons, employed as minders or learners, running one or two looms under the care and pay of the six-loom weaver as helper, when they get 6s. a week or run one loom for themselves; and if more expert, two looms, and are paid full wages.

Yet with this proportion of young persons employed the weekly wages paid are £155 or \$750, giving each worker, man, woman, and child, \$4.60, or \$239 per annum. Add to this their shareholders' interest and the dividend or profit share, and they will come above the average earnings of our cotton-mill operatives, as given in the census report of 1880.

But even standing by themselves and corresponding with those of non-operative mills in Burnley, the earnings are not very materially different from those in America, which were in the census year \$246.—TUNSTALL, ENGLAND, *May 3, 1888.*

J. SCHOENHOF,
Consul.

COMMERCE AND INDUSTRIES OF SIAM.

GEOGRAPHICAL POSITION.

Siam, the last of the independent kingdoms of "Farther India," extends from latitude 23° north to its southern boundary, between the Redang and Kedah, in latitude 5° north. Siam proper is bounded on the south by the Gulf of Siam, and is included within the valleys of the Bangkakong, Menam, Tachin, and Meklong Rivers.

POPULATION.

Its population is variously estimated at from 6,000,000 to 10,000,000, consisting, with the native Siamese, of Tavayans, Peguans, Burmese, and Cambodians. Of Chinese, there are from 1,200,000 to 1,500,000 who pay a triennial tax of \$2.40, Mexican, to the Siamese Government.

TRIBUTARY PROVINCES.

The Siamese of former days were a warlike race, but are now almost entirely etiolated. They fought with their neighbors, conquered and incorporated their kingdoms, and, with the exception of Burmah, had no one to fear. The Laos tributary provinces are situated on the north and contain the most valuable of the teak forests of the Kingdom. Chiengmai, the capital of Western Laos, is a large and flourishing city, the residence of the King, and bids fair to become the emporium of the north. In the southeast lie the countries wrested from the Cambodian monarchs, while along the Peninsula of Malacca, throughout almost its entire length, the Malay sultans and rajahs, who owe allegiance to His Siamese Majesty, hold their courts in oriental magnificence.

GOVERNMENT.

The Government of Siam is an absolute monarchy, which holds its courts at Bangkok. The power of the King is tempered by the influence of the princes and nobles, who have access to the councils of state, which, with the exception of the chief holidays, hold session daily. The Senabodi, chief ministers of the Kingdom, four in number, the council of state, composed of eight of the leading nobles, and the privy council, consisting of about thirty members, have cognizance of all matters affecting the welfare of the state. The first King of United Siam ascended the throne in the year 1351, since which time there have been forty Kings and two usurpers, embracing four dynasties. The present King, P'rabaht Somdech P'ra Paramendh Maha Chulalongkom Klow, ascended the throne in 1868. He is in his thirty-third year, and for an eastern potentate is possessed of very liberal ideas and much thought of by his subjects.

DIPLOMATIC AND CONSULAR REPRESENTATIVES.

Siam is well represented abroad by its ~~diplomats~~

established in London, Paris, New York, and Hamburg, while consuls, twenty-one in number, are found in the chief cities of the globe.

THE CITY OF BANGKOK.

Bangkok, the capital of Siam, is situated on the Menam River, about 25 miles from its mouth, and with its suburbs extends for about 10 miles along both its banks. It is intersected by a net-work of canals, many of large size, and connecting with the other three rivers of the country allow a water-way to all parts of the Kingdom. The city, which surrounds the palaces of the Kings of Siam, is situated on the left bank of the river and was founded by P'ra P'utta Yaut Fah, the first king of the present dynasty, in 1781. Its walls are about 11 miles in circumference, built in a most substantial manner of brick and stones, turreted at intervals, with a base of 18 feet. It was built by the late King after a visit to Singapore, the streets being laid out at right-angles, the building of bricks, and stuccoed. The palaces and Government buildings, as well as the residences of the diplomatic and consular corps, merchants, and chief foreigners, are situated on the left bank of the river. A carriage road, skirting the river from the palace to far below the present outskirts of the town, gives a means of communication by land, while the river is available for points on the right bank, which is settled by natives or Chinese merchants. The palaces of the princes and nobles, the "walts" or temples of Buddhism, and the residences of the Chinese merchants give a variety of architecture that is seen nowhere except in Bangkok. Markets are established at intervals throughout the city, and are well supplied with provisions, vegetables, and fruit, the system of canals allowing produce to be distributed to all points. There are two hotels, one of which, lately completed, is a palatial building. The Bangkok Hospital—established about two years—has filled a much needed want in this community, and is doing good work. There are several churches connected with the Protestant and Roman Catholic missions; also a library and club. The climate is healthy; in fact it has the name of being the healthiest in the tropics. The occasional cases of sporadic cholera and dysentery are due principally to the indigestion of the victims. Fevers are seldom dangerous, except the jungle fever. The temperature in Bangkok ranges from 57° to 98° Fahrenheit, while the mean for the last ten years has been 80.1°. The average rain-fall for the same period was 67.04 inches. Hail occurs here at long intervals, but the fall is very small, doing no injury to the crops. Bangkok has, with its environs, 400,000 inhabitants, a motley collection of all the races and nations of the East.

AGRICULTURE IN SIAM.

The annual freshets, caused by the overflowing of the banks of the rivers, render the country fertile in the extreme, insuring a good crop for the year. *have been carried on to any extent since making*

merchants came to make their residence in Siam, and foreign vessels sought cargoes in Bangkok, some trouble was experienced in obtaining them. Some of the natives being informed that rice would be acceptable began planting, and, finding a ready market for their crops, others followed their example, until to-day all the available rice fields are under cultivation. Canals have been excavated through waste lands, from river to river, by means of which immense tracts have been opened out to cultivation that otherwise would not have been available, owing to the expense of carriage of crop to market. The new fields are not taxable for five years, as well as the fisheries, thus encouraging the people to occupy that locality. Rice fields are divided off into squares of about one-third of an acre, which are rented by the Government to the people at the rate of 28 cents per square for the season. Owing to the amount of rain during the past rainy season the crops have been abundant. When the immense tracts of land now uncultivated shall have been opened out by means of canals and railways, the quantity of rice grown in Siam will be increased many fold. Siam exports rice to Singapore, Java, Hong-Kong, and China, while considerable finds its way to Europe and the Philippine Islands. Of vegetables we have the cabbage, turnip, tomato, green pea, bean, egg-plant, squash, pumpkin, cucumber, sweet potato, yam, and many others unknown to the West. The fruits are the same as are to be found at all places in the tropics, with the addition of the mango-steen and durion.

MANUFACTURES OF SIAM.

The manufactures of Siam are meager. Pans are made by the iron farmer, who has the monopoly, but the price placed upon them is so excessive that recourse is taken to importation from China, paying an import duty of 3 per cent. Knives, agricultural implements, and other articles are made by the blacksmiths throughout the country, but the amount is comparatively trifling. A cloth is manufactured for native use, but as with the iron, the tax on loom, material, house, and market duty makes the aggregate so much that few take to it as a livelihood. In Bangkok the cloth used by the Siamese is imported from Bombay, native production being seldom seen. Pottery of a very crude description is made, principally rice and curry pots, and water jars. There is no doubt that in the past, owing to the laziness of the people, they preferred to look to China for supplies rather than manufacture themselves.

MINES IN SIAM.

Siam is rich in minerals. Gold, iron, tin, and copper are found in many parts of the country, but the want of roads and consequent difficulty of getting these valuable metals to market prevent their being worked except for the limited wants of the natives. The eastern part of Siam is very rich in iron, antimony, and argentiferous copper and tin. It is from the provinces of Petchaboon and Löm that the cutlasses, spears, and knives are furnished to

Gold.—This metal is found in many places, but the mines at Bang Tapan, on the west coast, are said to contain the purest gold in the country. They have been worked by the natives by simply turning over the ground, the gold being found in the shape of nuggets. When nuggets over a certain size were found the miners were obliged to hand them over to the Government, being paid for the same according to a tariff fixed by the authorities. A syndicate of foreigners has been formed, with a concession from the King, for working these mines, and have now a number of workmen employed, the prospects for rich developments being good. Owing to the fatal diseases of that section it is impossible for foreigners to remain in that locality. The quartz mines of Muang Krabin, sometimes worked under the supervision of Pra Pecha, the governor of Muang Prachin, although productive, were declared unprofitable to the Government. Experienced engineers from Australia, mining machinery of recent invention, immense upright pumps, and other hydraulic machinery, and a narrow-gauge railroad, with rolling stock for the conveyance of the product, had been procured for the working of the mine, but the organizer of the great scheme having been decapitated for alleged treason, the whole of the plant is lying idle, the brush of the jungle is covering all trace of past work, and tens of thousands of dollars' worth of material is fast going to ruin. The royal metal of Siam is mostly manufactured into vases, tea-pots, betel-boxes, and other articles, which it is the custom of the Kings of Siam to present to subjects upon their elevation to high rank in the peerage of the Kingdom. They are looked upon, in a sense, as insignia of their exalted rank, the shape and style of the set denoting the standing of their beneficiary. The metal being pure gold, braces are required, as it is too soft to retain its shape without. It is impossible at present to procure statistics concerning the output of the mines. The value of gold leaf imported from China in the year 1886 was \$101,287, as compared with \$427,441 for 1885. The greater part of this was made into jewelry.

Iron.—Iron of good quality is found in the eastern provinces, but it is worked in the crudest manner possible. Foundries are unknown factors in that primitive region. A hole or pit having been dug close to the mountain, the miner collects and piles up his ore, which he smelts with charcoal. The molten metal is deposited in a cavity prepared for its reception, and when cold the product is carried home. There a fire is built, which is kept alive by a bellows made of two trunks of hollow trees buried in the ground and having two long sticks as handles. A child works the bellows while husband and wife or son hammer the iron into shape. The knife, cutlass, spear, or agricultural implement produced by this combined labor finds a ready sale throughout the north, and although the workmanship is poor it suits the requirements of that section. The locality of the mines preclude shipments to Bangkok as it would have to be conveyed to the river on elephants, a

Singapore from the locality in which it is mined, after paying the duty to the farmer, and for this reason but little reaches Bangkok, and that in payment of duties, presents, or tribute from the Malay rajahs. The amount exported from Bangkok during the year 1886 was valued at \$69,617, an increase of \$15,480 over that of 1885. Tin is also found in eastern Siam to a limited amount, but none of it finds its way to the capital.

Copper.—This metal is found in certain localities, especially in the eastern provinces—Champasak, Petchaboon, and Löm. In the former province, on the Makong River, there is a place where the natives procure the finest metal, of which they make a coin that passes current in that locality. It is about 2 inches in length, a quarter of an inch in breadth, and shaped like a canoe. The province adjoining that has an iron coin of the same shape, but larger in size. Virgin copper is held in great esteem by many for certain qualities it is supposed to possess when employed as an agent in transmitting metals. Without it is used as a basis the native alchemists claim that gold can not be obtained.

Coal.—Coal is found on the coast and in the interior, but can not be utilized.

Limestone.—This is brought to Bangkok from the interior, and is burned by the Government farmer. The lime is mixed with tumeric, and is used to an immense amount by the Siamese in combination with the betel-nut and *seri* (pepper leaf).

Precious stones.—These come principally from the province of Chantibun; rubies, sapphires, black corundums, topaz, asterias, and other stones being found in that section. The diamond is unknown as a native stone. The sapphire mines to the southward of Chantibun, to which thousands of Burmese flocked a few years ago, have been exhausted. Some valuable stones are reported to have been found there.

PRODUCTS OF THE FORESTS.

The products of the forests, second in importance among the resources of Siam, number many valuable woods, some of which are unknown to western nations. Sapan is largely exported to China and Hong-Kong. Ebony, rose, padoo, yellow, and satin are susceptible of a high polish, and are much used for making furniture and fancy articles. Iron-wood is employed in building the small native craft, and for that purpose can not be excelled. Agilla, or calambac, found in the hollow trunks of trees, is highly aromatic, and used by the natives of Asia for burning as incense. Fine specimens, heavily impregnated with its essential oil, command fabulous prices. It is also used in medicine. Many of the choicest productions of the country can only be obtained in small quantities, and, except in the palace or among the higher nobility, they are seldom seen; they are used principally in the construction of musical instruments.

Teak.—Teak is the most valuable timber of the country. It is utilized

building it is without an equal; is largely exported to China and Europe for that purpose, and for resisting the ravages of the white ants and the effects of the weather it is unsurpassed by any other wood. It grows in the northern part of Siam and Burmah at an altitude of from 1,200 to 1,500 feet above the sea, and reaches its greatest perfection in about one hundred and twenty years. Ten or fifteen years make a good-sized tree that can be cut down, where quality of wood is not an object. It is generally believed that the forests will become exhausted before many years, there being no laws to prevent the indiscriminate felling of timber nor compulsory planting of new trees. The teak district is from 100 to 150 miles in width, the forest being in charge of the governors of the provinces in which they are situated. They are generally leased for a term of ten years, and it behooves the lessee to fell and remove the greatest number of logs possible, he paying a royalty to the governor of \$1.80 per log. The trees are girdled and are left standing for two years to allow the sap to run out and the wood to become perfectly dry. If girdled to the heart, and deep holes are bored with an auger, one year will be sufficient. The cutting down takes place in the dry season, and the logs are left until sufficient rain has fallen to allow of their being dragged to the river with the help of elephants. The logs are collected into rafts preparatory to being floated down to Bangkok. For convenience in trading in timber a fixed rate has been established by the foresters to be used as a unit in computing the value of logs. A log may be bought for one, two, three, or more times the amount of the unit for that size of log, and in Bangkok, where the unit (*pikat*) rate is also respected, the price of timber is often six and seven times the unit of the northern rate, which is as follows:

Selling pikat rate.

Wah.	Kam.								
	7.	8.	9.	10.	11.	12.	13.	14.	15.
	<i>Ticals.</i>	<i>Ticals.</i>	<i>Ticals.</i>	<i>Ticals.</i>	<i>Ticals.</i>	<i>Ticals.</i>	<i>Ticals.</i>	<i>Ticals.</i>	<i>Ticals.</i>
3.....	2	3	4	5	6	7	8	9	10
4.....	3	4	6	8	10	12	14	16	20
5.....	4	6	8	10	12	16	20	24	28
6.....	6	8	10	12	16	20	24	28	32
7.....	8	12	16	20	24	28	32	36	40
8.....	10	14	20	24	28	32	36	42	48
9.....	12	16	22	26	32	38	44	50	60

NOTE.—In this rate the *wah*, or fathom, is the measure of length, and is equal to 78 English inches. The *kam*, or hand, gives the circumference, and is about 4 inches. The value is in ticals, at the rate of 60 cents of a Mexican dollar.

After the logs are made up into rafts they are delivered to the raftsmen to

 about one-half of the unit of value, and

which causes an outlay of \$3.60 for offerings, and is paid by the owner of the timber. This custom remains in force, despite the efforts of the foreign and educated classes to stop it, and should any one ignore it they would be unable to procure raftsmen. Having floated the rafts down to the timber custom-house, the logs are measured and the duty computed according to the following tariff:

Duty.

Wah.	Kam.								
	7.	8.	9.	10.	11.	12.	13.	14.	15.
	<i>Ticals.</i>	<i>Ticals.</i>	<i>Ticals.</i>	<i>Ticals.</i>	<i>Ticals.</i>	<i>Ticals.</i>	<i>Ticals.</i>	<i>Ticals.</i>	<i>Ticals.</i>
3.....	1	1 $\frac{3}{8}$	2	2 $\frac{3}{8}$	3 $\frac{1}{2}$	4	4 $\frac{3}{4}$	5 $\frac{5}{8}$	6 $\frac{3}{4}$
4.....	1 $\frac{3}{8}$	2	2 $\frac{5}{8}$	3 $\frac{1}{2}$	4	4 $\frac{3}{4}$	5 $\frac{5}{8}$	7 $\frac{5}{8}$	8 $\frac{3}{4}$
5.....	2	2 $\frac{1}{2}$	3 $\frac{5}{8}$	4 $\frac{3}{8}$	4 $\frac{3}{4}$	6 $\frac{3}{8}$	7 $\frac{5}{8}$	8 $\frac{3}{4}$	10 $\frac{3}{8}$
6.....	2 $\frac{5}{8}$	3 $\frac{5}{8}$	4 $\frac{3}{8}$	5 $\frac{5}{8}$	6 $\frac{3}{8}$	8	8 $\frac{3}{4}$	10 $\frac{3}{8}$	12
7.....	3 $\frac{1}{8}$	4 $\frac{3}{8}$	5 $\frac{1}{2}$	6 $\frac{3}{4}$	8	9 $\frac{1}{2}$	10 $\frac{3}{8}$	12	14 $\frac{3}{8}$
8.....	4 $\frac{3}{4}$	5 $\frac{1}{8}$	6 $\frac{3}{4}$	7 $\frac{5}{8}$	9 $\frac{1}{2}$	10 $\frac{1}{8}$	12	13	16
9.....	5 $\frac{1}{8}$	5 $\frac{1}{2}$	7 $\frac{5}{8}$	8 $\frac{3}{4}$	10 $\frac{3}{4}$	11 $\frac{1}{4}$	13 $\frac{1}{2}$	16	19 $\frac{5}{8}$

NOTE. — The duty is computed in ticals and fractions thereof at the rate of 60 cents of a Mexican dollar, or about 45 cents in United States currency.

The above duty can be paid in Bangkok upon obtaining permission from the head farmer. In years of light rain-fall great difficulty is experienced in getting timber to market. The year 1886 was the first year that timber has been floated down in any quantity since 1884. There is one steam saw-mill in Bangkok, belonging to foreigners, and six where coolie hand-labor is employed. The Chinese have nearly a hundred establishments, many of which saw under agreement with foreigners. Square timber sold the past year at 80 cents per cubic foot, and plank at 85 cents. For shipment to Hong-Kong timber sold for \$6 per yoke of 169 square feet for prime and \$4.20 for second-class wood. The price in London fell last November to £8 10s. 6d. per ton, owing to the market being overstocked.

FISHERIES.

The fisheries of Siam, next to rice, affects the welfare of the people more than any other food industry, as all, both rich and poor, live almost entirely upon the products of river and sea. Those of the river depend upon the rain-fall, while salt-water fisheries, of which the platoo is the most valuable, look to the northeast monsoon to bring the fish up into the head of the Gulf, as the platoo fish always swim against the wind. The salt-water fisheries, once the most important source of revenue, with the exception of rice, has dwindled down the last three years to one-third its former amount. The platoo fish, which sought the head of the Gulf in large shoals and remained for over six months of the year, have now almost entirely disappeared. Forty or fifty vessels have loaded in a single

that sailed with fish for that locality. The platoo, formerly the poor man's food, has now increased in price from 1 cent to 8 and sometimes 12 and 15 cents for fifteen fish. The value of the exports of fish from Bangkok from the year 1881 to 1886, inclusive, were as follows: 1881, \$1,105,947; 1882, \$1,018,822; 1883, \$1,280,573; 1884, \$550,655; 1885, \$357,893; 1886, \$495,916.

COMMERCE.

Owing to the lax manner of doing business at the Bangkok custom-house, the latest returns which I can forward in relation to imports, exports, and navigation are for the year 1886.

Shipping.—A few years ago the Siamese had a fleet of merchant vessels, many of them built in the country, which were fine specimens of the handicraft of Siam. The establishment of permanent lines of steam-vessels to Singapore and Hong-Kong has left them but little to do except running along the Chinese coast, braving the typhoons in search of charters. They are dropping off year by year, and it will not be long before a Siamese vessel will be a thing of the past. The lines of steamers increase the number of their vessels as the trade warrants, thus keeping out the sailing vessels. Tramp steamers occasionally appear, and always obtain a cargo.

Imports.—The value of the imports into the port of Bangkok, as declared at His Siamese Majesty's custom-house, was \$7,384,718—an increase of 8.121 per cent. over that of 1885. The imports of cotton, linen, and miscellaneous piece and woolen goods amounted to \$1,043,598—a decrease of about 16 per cent. as compared with the former year. Of kerosene oil there were 167,824 cases, valued at \$275,254, while that of 1885 was 100,779 cases, valued at \$178,027—an increase of \$97,227 over that of 1885. During the year there were imported by the Siamese Government, for the Bangkok opium farm, 664 cases of opium, valued at \$374,914, or \$564 per case, showing a considerable falling off both in quantity and the value of the drug. Of flour, 18,500 bags were imported, at \$26,041, while in 1885 there were 19,496 bags, at \$24,565, making the value for 1886 \$1.41, while that of 1885 was \$1.26 per bag. Cocoa-nuts, palm-oil, betel-nuts, sugar, molasses, fire-wood, and bees-wax—all of which, except the first two, are cultivated or manufactured in abundance in Siam—are imported in constantly-increasing quantities, owing to the high rate of duty imposed upon native productions, which range from 6 to 20 per cent. of the value, whereas the import duty is but 3 per cent. ad valorem. Iron and earthenware come under the same category. Of liquors, there were imported to the value of \$192,800, of which 66 $\frac{2}{3}$ per cent. came from Hong-Kong and consisted of Chinese *samshu*—vile liquors made of beans, potatoes, and sometimes rice, containing fusil oil in excess, and highly deleterious. Specie was imported to the amount of \$272,199, compared with \$372,199, the amount exported, showing a

Rice, the chief export, is put down at 3,618,497 piculs of $133\frac{1}{3}$ pounds, valued at \$6,542,938, a slight decrease in quantity but an increase of 11 per cent. in price. The exports from the year 1881 to 1886, inclusive, were as follows: 1881, 3,670,773 piculs, \$6,001,885; 1882, 3,308,995 piculs, \$5,207,335; 1883, 2,620,950 piculs, \$4,442,517; 1884, 4,683,360 piculs, \$7,083,241; 1885, 3,648,615 piculs, \$5,855,186; 1886, 3,688,497 piculs, \$6,542,938.

The exports of teak to all parts were 365,349 piculs, valued at \$672,986, as compared with 304,762 piculs, at \$592,090, for 1885. Of the shipments of 1886, about 45 per cent. went to Europe, and a marked increase is observed to all parts, with the exception of Bombay. Of fish, there were exported 157,163 piculs, at \$495,916, an increase of nearly 36 per cent. over that of 1885. Of the products of the forest, otherwise than teak, there were shipped in 1886 \$320,080 against \$225,392 in 1885, showing an improvement of about 20 per cent. Agilla, rose, iron, padoo, and yellow woods show an increase, while sapan, ebony, mangrove bark, and krangi wood have decreased. Of gums, drugs, and dyes there were exported \$385,171, an increase of 3.713 per cent. Products of the jungle show a decrease of 4.5 per cent., being valued at \$337,574. Ivory, rhinoceros horns, peacock's tails, deer sinews, tiger's bones and glue, and armadillo skins were exported in excess, while rhinoceros hides, old and young deer's horns, elephant hides, tiger's and other skins, buffalo horns, hides and bones show a decrease. Of live stock, there were exported to the value of \$193,818, an increase of nearly 20 per cent. This item includes one elephant valued at \$156, and 14,141 head of cattle at \$190,160, or \$13.40 per head, all of which were shipped to Singapore for consumption at that or transshipment to the neighboring ports or Java.

TRADE WITH THE UNITED STATES.

There have not, for some years, been any shipments of produce from this port to the United States. Kerosene first figured in the return of imports for 1874, in which year there were invoiced 7,935 cases, valued at \$26,019, or \$3.27 per case. In 1886 there were imported 167,824 cases, valued at \$275,254, or \$1.64 per case. Of the above amount, 104,494 cases, at \$174,010, came directly from New York, being nearly double that of the former year, as is shown by return of imports of kerosene from 1881 to 1886, inclusive. For the last year the price of kerosene has been about \$1.80 per case. The highest it ever sold for in Bangkok was during a scarcity which occurred in 1878, when it rose to \$12 per case. For some years after its introduction the Siamese considered it dangerous and would not use it, but of late it has been adopted by all, and large quantities are taken into the interior. Lamps, principally of German make, flood the country, their price being so low that they meet a ready sale. The American patent lamp is much approved, but its price is too high, except for the wealthy classes. No doubt imitations will find their way here when the demand requires them.

import direct from New York, making up their deficits by supplies from Singapore and Hong-Kong. Small lots are often imported by the Chinese from Hong-Kong.

Flour.—American flour finds its way here via Singapore and Hong-Kong, the bulk of it coming from the latter port. It is consumed by the Chinese cake and confection farmers in lieu of the rice flour formerly used by them. The foreign community use but little flour in their households, as they are supplied by the bakers of Bangkok. If a uniform first-class grade was imported direct, the amount of import would increase. As it is, there are so many different grades that the natives, being unable to judge the quality, often buy a worthless article and lose faith in all.

Canned provisions.—The demand for American canned goods is gradually increasing. The foreign stores sell more or less, and the Chinese have large stocks on hand, which are purchased at auctions in Singapore and Hong-Kong. The stocks of American goods are more varied than that of other countries, and will, no doubt, with the exception of certain delicacies from Europe, oust all others out of the market. The missionary families are generally supplied from home with goods of this description. Travelers or dwellers in the northern provinces require large supplies during their stay in the interior, and the influx of foreigners into Siam will ultimately make this branch of business highly lucrative to those who keep good stocks on hand. California wines have long been sold here, and meet with a steady sale. It is generally acknowledged that what they lose in the want of age they gain in purity.

American scales, sewing-machines, clocks, etc., find their way here through various channels. The type-writer is well known in this community, and, although the field is not large, would find a sale if properly introduced. The lack of agents to place desirable goods before the public, to explain, when customers are ignorant, the good qualities of the articles they are selling, and to advance the interests of American commerce, both here and along the Chinese coast, is a want that has retarded the introduction and sale of our productions, and until it is supplied the merchants of the United States will be handicapped by European competition.

STEAM-SHIP LINES.

Bangkok is connected with Hong-Kong by a fleet of six steamers, which run regularly, making the round trip in about twenty-five days. They are of about 600 tons burden and well fitted out. At present the number of passengers is so limited that accommodation gives place to freight, but should the demand arise for more cabin space, the energetic Chinamen, who are the owners of the lines, will, no doubt, adapt themselves to circumstances. A first-class passage from Bangkok to Hong-Kong, or *vice versa*, is \$70 (Mexican), being a distance of 1,500 miles. This amount is often reduced by applying

is made in the passage money. Six steamers are now running regularly between Bangkok and Singapore, the emporium of the East. The time occupied on a passage to or from Bangkok is less than four days, while eleven days will complete the round trip; the fare charged is \$40 for the passage. Three of the steamers running to Singapore are branch steamers of the "Holt," or Liverpool and China Ocean Steam-ship Company, which also has a branch line running to New York. Goods shipped at the latter port by this line, and invoiced through to Bangkok, will reach here without the delays in Singapore that arise with other lines. A steamer has lately been put into service, and runs between Saigon and this port. She is subsidized by the French Government, but as Singapore has long enjoyed the monopoly of the trade of this section it will be found impossible for the new line to break the well-established order of things. A line of steamers is now running down the coast, connecting the principal points in Siamese territory with the capital. Attempts have also been made to improve the facilities for inland travel, but the low state of the river above Ayuthia for many months of the year almost precludes the possibility, except for very small launches.

POSTAL FACILITIES.

In Bangkok there are two post-offices, and, in connection therewith, letter-boxes have been distributed throughout the city and suburbs, from which collections are made and delivered three times a day. The regulations concerning the postal service are founded on European practice, and the efforts of the prime minister to bring the service up to a high standard are truly praiseworthy. Postage on letters to any part of the city is about 2 cents per half ounce; postal-cards, $1\frac{1}{2}$ cents; books and printed matter, 1 cent per 2 ounces. There are fortnightly, weekly, tri-weekly, and daily connections with various points in the interior, and it will not be long before there will be postal connections with all parts of the country. Postage to all parts of the Kingdom is, for letters, $3\frac{1}{2}$ cents per half ounce; printed matter, 1 cent per 2 ounces; registration, 8 cents. Foreign mails leave on every steamer sailing for Singapore and Hong-Kong, where they connect with the European and American mails. Each steamer arriving in Bangkok has a local (if not a foreign) mail, which arrives in Singapore weekly and at Hong-Kong fortnightly. Postage to union countries is, for letters, about 12 cents per half ounce; to non-union countries, 24 cents; to China, Saranak, Straits Settlements, and North Borneo, 8 cents per half ounce; to union countries, printed matter, 3 cents per 2 ounces; registration, 12 cents.

TELEGRAPH.

The telegraph connects Siam with the outside world by means of two lines, one running east to Saigon, the other west through Burmah. A system of lines connect Bangkok with all parts of Siam (with the exception of certain provinces situated along the west coast); others are now in process of construction. The charges are necessarily high but they will

EDUCATION.

The first attempt made by the Siamese Government to establish a system of schools after the model of Western nations was begun in January, 1879. A school was opened at Nanda Garden palace, in the city of Bangkok, under the direction of a committee of the Government, and placed under the superintendence of S. G. McFarland, D. D., aided by a number of assistant teachers. The pupils the first year numbered about 100, and were selected from the best families of the country. Some were the sons of noblemen and several were the sons of princes. Instruction was imparted in the Siamese and English languages, and as all were beginners in English the instruction was at first rather elementary. Soon afterwards two other schools after the same model were opened, where the English language was taught in connection with the Siamese. Two years ago the Government made additional efforts to open free schools in Bangkok for the common people, where the pupils were taught reading and writing and the elements of arithmetic in the Siamese language. There are now about thirty-five of these schools and an aggregate of about 1,994 pupils. The most of these schools are conducted in buildings connected with their religious temples, but taught by teachers in the pay of the Government. There are two large fine buildings on the bank of the river, a short distance below the King's palace, erected at great expense by the Government and to be devoted to educational purposes, but they are not yet ready for use. These buildings are designed for schools of a higher grade, but as yet education has not advanced to a stage where high schools are required, so the instruction must be elementary.

MISSION SCHOOLS.

Schools have been conducted for many years by the Presbyterian and Roman Catholic missionary societies, and they have educated many of the natives, who have taken a high stand for intelligence and integrity in the country. At present the Catholic schools are supported principally by the Eurasian part of the community. They have one school for boys and one for girls, which are fairly prosperous. There are at present two schools for boys and two for girls under the care of the Presbyterian missionaries, where instruction is given both in the native language and in English. These are doing good work, not only as educational, but as evangelistic and civilizing institutions. They have in all about 200 pupils under instruction. Besides these principal schools there are a number of smaller schools, that are taught by native Christians, under the care of the missionaries; both boys and girls are received into these, and much religious instruction is given, with the elementary education, in the native language.

RELIGION.

and it numbers upwards of twenty priests. They have numerous churches and chapels, but the number of their followers can not be ascertained. They consist chiefly of the descendants of the old Portuguese residents and the greater part of the Cochin-Chinese element of Siam.

American missions.—The first mission established in Bangkok by Americans was the Siamese Baptist, which event took place 1833. It has at present but one place of worship, and is self-sustaining. A branch was commenced in 1835, devoted entirely to the Chinese, and called the "Chinese Mission." There are four missionaries connected with it, who have five churches and five chapels under their charge. The outlying stations are under the superintendence of Chinese teachers. The American Presbyterian mission was commenced in 1840 and now numbers about thirty persons, missionaries and physicians, who are distributed between the four stations—Bangkok, Petchaboon, Chiengmai, and Lakaun; the two latter being situated in the Laos or Shan states of the same name, and distant from Bangkok upwards of 500 miles. This mission has seven churches, and the physicians connected with it are worthy auxiliaries to the missionaries, as they do much good administering to the physical wants of the natives, especially in surgical cases, and by their efficiency and the cures effected have done no little in breaking down the prejudices that the native physicians and priests had endeavored to instill into the minds of the people. Too much credit can not be given to the missionaries; they have labored faithfully in the cause of Christianity, and the seed sown has not fallen on sterile ground.

MARITIME.

The average depth of water on the bar is from 12 to 13 feet, but toward the end of the rainy season, in October and November, the country is flooded by the receding of the waters, and vessels drawing 14½ feet can cross at high spring-tides. In April, when the water is at its lowest, there is but 10½ feet, while at spring low water the depth ranges from 3 to 5 feet, according to the season. Vessels having to land or discharge cargo outside the bar take refuge while doing so under the lee of the island Koh-See-Chang, about 20 miles distant from the bar. It affords a safe anchorage and protection from the black squalls that are frequent during the southwest monsoon, and allows a free handling of cargo throughout the year. Lights have been placed at either entrance, facilitating ingress and exit. On the mainland, abreast of the roads, there is a telegraph station in connection with Bangkok, while there is almost daily steam intercourse with the capital. The cost of lighterage is 5 cents of a Mexican dollar per picul of 133⅓ pounds dead weight. A light-house, called the Regent's Light, is located on the outer edge of the bar, and distant from Bangkok about 30 miles. It has telephone connection with Paknam, about 5 miles within the river's mouth, where messages are telegraphed to Bangkok. Light dues of 1½ cents per registered ton are collected on all vessels loading in the river and three-fourths cents on those loading outside.

clearance, which costs \$1. From September to December vessels wishing to ascend the river to Bangkok are compelled, owing to the velocity of the current, to employ the assistance of a tug to convey them to their destination. At present there are two vessels, the *Bangkok* and *Charun Poen*, engaged in towing and lightering. At times during the southwest monsoon vessels can ascend the river under sail, but where time is an object it is always best to engage a tug. There are now three persons who act as pilots for the rivers of Siam, and are always to be found in the neighborhood of the light-house.

SCALE OF EXCISE DUTIES.—*On beers and wines, 5 per cent. on the value thereof; on spirituous liquors of all kinds under the strength of 50° of alcohol the same as if the liquors were of a strength of 50°; of and above the strength of 50°, as follows:*

Strength.	Per gallon.	Per liter.	Strength.	Per gallon.	Per liter.
50°.....	\$1 20.0	\$0 26.20	76°.....	\$1 82.2	\$0 40.16
51°.....	1 22.2	27.06	77°.....	1 84.4	41.02
52°.....	1 24.4	27.22	78°.....	1 87.1	41.18
53°.....	1 27.1	28.08	79°.....	1 89.3	42.04
54°.....	1 29.3	28.24	80°.....	1 92.0	42.20
55°.....	1 32.0	29.10	81°.....	1 94.2	43.06
56°.....	1 34.2	29.26	82°.....	1 96.4	43.22
57°.....	1 36.4	30.12	83°.....	1 99.1	44.08
58°.....	1 39.1	30.28	84°.....	2 01.3	44.24
59°.....	1 41.3	31.14	85°.....	2 04.0	45.10
60°.....	1 44.0	32.00	86°.....	2 06.2	45.26
61°.....	1 46.2	32.16	87°.....	2 08.4	46.12
62°.....	1 48.4	33.02	88°.....	2 11.1	46.28
63°.....	1 51.1	33.18	89°.....	2 13.3	47.14
64°.....	1 53.3	34.04	90°.....	2 16.0	48.00
65°.....	1 56.0	34.20	91°.....	2 18.2	48.16
66°.....	1 58.2	35.06	92°.....	2 20.4	49.02
67°.....	1 60.4	35.22	93°.....	2 23.1	49.18
68°.....	1 63.1	36.08	94°.....	2 25.3	50.04
69°.....	1 65.3	36.24	95°.....	2 28.0	50.20
70°.....	1 68.0	37.10	96°.....	2 30.2	51.06
71°.....	1 70.2	37.26	97°.....	2 32.4	51.22
72°.....	1 72.4	38.12	98°.....	2 35.1	52.08
73°.....	1 75.1	38.28	99°.....	2 37.3	52.24
74°.....	1 77.3	39.14	100°.....	2 40.0	53.10
75°.....	1 80.0	40.00			

The liquor tariff has long been a source of annoyance to the Siamese Government, and one they could not control, as it was in the hands of foreign subjects, principally of Chinese birth. It interfered with the Siamese liquor farms, was the cause of innumerable law suits, and for some years the Siamese Government has endeavored to enlist the treaty powers in its behalf. At last, in the year 1884, Siam, represented by Prince Krom Mun Narate Rajah Warariddhi, obtained from the foreign powers the concessions it had long sought for in vain, and, with the approval of the diplomatic and consular body of Bangkok the Government drew up a draft of the new excise law that is

MINERAL PRODUCTS OF NEW SOUTH WALES.

Although it is very generally admitted that the mineral resources of New South Wales are more extensive and varied than those of any other part of Australasia, for some reason they have not received the attention which they so richly deserve. Many of the mining industries here have been allowed to languish through want of capital and new and improved machinery. This seems to be especially true in regard to the industries of gold and silver mining.

Gold was first found in New South Wales, but the search for it was never prosecuted with the same skill and energy as in Victoria, and the result is that the annual yield of the metal in the latter colony for many years past has been five or six times greater than that of New South Wales. The total yield of gold in Victoria since its discovery in 1851-'52 has been 54,393,182 ounces, valued at £217,572,728 (\$1,058,817,680), against only 9,731,213 ounces, valued at £36,058,717 (\$175,479,746), for New South Wales. The returns for minerals other than gold in both colonies have not been brought up to a later period than December 31, 1886. The value of all kinds of mineral products in New South Wales for the year 1886 is £2,928,428 (\$14,251,194.86), against £2,709,914 (\$13,187,795.98) for Victoria. The total value of the mineral products for New South Wales in 1887 was £3,165,938 (\$15,407,036), showing an increase, as compared with 1886, of £237,511 (\$1,155,846.78). This was mainly due to the increased output of gold, silver, lead ore, coal, and bismuth, and to the rise in the price of copper and tin.

Shale, iron, and antimony showed a decrease. The largest increase was in the products of the silver mines. The yield of gold for Victoria during 1886 was 665,196 ounces, valued at £2,660,784 (\$12,948,705.33), against only 101,416 ounces, valued at £366,294 (\$1,782,569), for New South Wales. The latter colony, however, more than made up the difference in the value of her other mineral products. For instance, the total value of minerals other than gold in Victoria for the year 1886 amounted to only £11,126 (\$54,144), and in New South Wales £2,662,133 (\$12,955,270).

The subjoined table shows the value of the various mineral products in both colonies for the year 1886 in English and American currency:

Kind.	New South Wales.		Victoria.	
	£	\$	£	\$
Gold	£366,294	\$1,782,569	£2,660,784	\$12,948,705.33
Silver	197,544	958,695	5,284	25,714.00
Copper.....	167,665	815,941	1,922	9,352.00
Tin	467,653	2,285,832	90	437.98
Coal	1,302,164	6,336,981	107	520.71
Shale	99,976	486,527		
Antimony	3,381	16,453		
Bismuth	3,870	18,832		
Lignite			304	1,479.41
Slates			1,536	7,474.00
Silver-lead ore	294,485	1,433,106		
Unenumerated				
Flagging				

It will be seen from the preceding table that the value of the mineral products of Victoria, other than gold, is so small as to be scarcely worth taking into consideration. The value of the silver product in that colony for 1886 is given at £5,284 (\$26,714.50), but it was not obtained through mining for silver, but at the Melbourne mint during the process of refining gold. Several years ago a silver mine was worked at St. Armand, Victoria, but it proved to be unremunerative, and was shortly afterwards abandoned.

In New South Wales, however, silver fields are being opened up in every direction, and especially in the Barrier ranges. The Broken Hill Proprietary Company's mine, in that district, is said to be the largest silver mine in the world, even surpassing in extent and richness the celebrated Comstock, of Nevada. One of the most important fields in the Broken Hill Proprietary Company's property is the "Mount Eurorie." This field was purchased from the original discoverer in March, 1887, and in less than six months the price of its shares rose to £150,000 (\$729,975). The company have secured the services of Mr. W. H. Patton, at a salary of £4,000 (\$19,466) per annum. Mr. Patton has had large experience in silver mining in the United States, and was, for several years, manager of a group of the Comstock mines in Nevada. The Broken Hill Proprietary Company, from June 1 to November 30, 1887, crushed 28,799 tons of ore, and obtained 1,267,669 ounces of silver and 6,511 tons of lead. The profits of the mine during that period were £120,201 (\$584,958). The average cost for smelting the ore was £2 12s. 4d. (\$12.75) per ton.

The silver mines at Sunny Corner, situated about 127 miles from Sydney, on the Great Western Railway, are also profitably worked. These mines, however, have been noticed at length in my special report on silver, published in No. 57, page 5, of the Consular Reports.

In the Barrier ranges as much as 1,000 tons of rich ore have been taken out of one cutting measuring 35 feet deep, 450 feet long, and 6 feet wide. Some of this ore assayed 1,500 ounces to the ton. A series of lofty silver cliffs, with rich ore cropping to the surface, extend over a distance of 2 miles. In one mine, at a depth of 150 feet, a lode 14 feet wide, of extraordinary richness, has been found. This lode is said to be 20 feet wide in one place, and to extend from northeast to southwest through the entire hill. Mr. Patton, the manager of this property, has been severely criticised for purchasing his mining appliances in England instead of the United States. It is said, however, that all the appliances used are made after American designs, and that the reason for their purchase in England is the cheaper cost of the material there. The report of the New South Wales mines department for 1887 has just been placed before Parliament, but several months will elapse before it is published. Mr. Harrie Wood, under secretary for the mines, has furnished me with an abstract of the report, and I learn from

"It is a long time since so much enterprise has been developed in the search for gold and other minerals, and results indicate not only the value of such enterprise, but the extent and richness of the resources of the colony." He complains that the mining appliances are not, in all cases, equal to a profitable treatment of the deposits, and, as a consequence, some very promising ventures are in a languishing condition.

The total quantity of gold from the colony received into the royal mint, at Sydney, during 1887, was 105,268.71 ounces, as compared with 91,854.72 ounces, the increase being 23,208.98 ounces. The total export of gold during the year 1887 was 10,977 ounces, of a total value of £41,972 (\$204,258). The quantity of gold sent to the mint, together with the quantity of gold exported in 1887, was 110,288 ounces, valued at £394,579 (\$1,920,218), showing an increase over the output for 1886 of 8,871 ounces.

The number of miners engaged in gold mining during 1887 was 6,060, being 707 less than in 1886. With regard to coal, the output of 1887, as compared with that of 1886, showed an increase of 92,322 tons, while the value of the output increased by £43,276 (\$210,602). The exports to inter-colonial ports showed an increase of 49,475 tons, and the exports to foreign ports an increase of 5,082 tons. The total output in 1886 was 2,830,175 tons, valued at £1,303,164 (\$6,341,847), and in 1887, 2,922,447 tons, valued at £1,346,440 (\$6,552,450). The output of shale was less by 3,553 tons than in 1886, though the quantity of fine silver exported in 1887 was considerably less than in 1886. The quantity of silver and lead ore exported showed an increase in value of £82,381 (\$400,907). There is reason to believe that the output for the present year will greatly exceed that of last year. The total quantity of silver exported was, in 1886, 1,015,433 ounces, valued at £197,544 (\$534,497); in 1887, 177,307 ounces, valued at £32,458 (\$157,553). Silver and lead ore, total exported, 1886, 4,802 tons, valued at £294,485 (\$1,434,111); 1887, 12,529 tons, valued at £541,952 (\$2,637,408). The output of tin during 1887 did not largely exceed that of 1886, the total value being £525,420 (\$2,556,915). With regard to copper, the value of the output in 1887 was £199,102 (\$968,929). Only one company—the Eskbank Iron Company—was engaged in making iron in the colony during the year, and the output was 2,746 tons of bar and rail iron, valued at £13,459 (\$65,497), and 50 tons of other kinds, valued at £1,083 (\$5,269). One hundred and sixty men and boys were employed in the industry during 1887.

SAMPLES OF AUSTRALIAN MINERALS, PRINCIPALLY NEW SOUTH WALES.

I am forwarding with this report a case marked A, containing samples of Australasian minerals for the Department of State at Washington, D. C. These minerals have been collected by me at intervals during my residence here as United States consul. Many of the most valuable specimens were furnished me by the trustees of the Australian Museum.

No. 1. Copper ore, from the great Cobar copper mine, New South Wales. This mine, which is one of the largest in the world, is situated about 550 miles from Sydney, in the center of the dry district. The average number of men employed in the mine during the last ten or twelve years has been about four hundred. The amount of ore raised from January 1, 1875, to December 31, 1887, was 191,403 tons, which produced 21,866 tons of fine copper, valued at £1,500,000 (\$7,299,750). The main shaft is down 600 feet, the first portion being through carbonate ground. Below the 300-foot level the ores are sulphuret, and average 7 per cent. of pure metal. In the lower levels the ore varies from 7 to 50 feet, and in one place is 60 feet across. The chief obstacles in the way of increasing the copper industry in the Cobar district are scarcity of water and the long distance from the seaboard.

No. 2. Tin-ore cassiterite crystals in quartz form; New England district, New South Wales.

No. 3. Silver gossan, with cassiterite, from the Lewis' Pond mine, in the Barrier ranges, New South Wales.

No. 4. Calcareous tuff, formed mostly of débris of shell and a small amount of volcanic matter, found in Lord Howe's Island, a small island belonging to New South Wales, about 900 miles from Sydney. This specimen contains a piece of turtle bone.

No. 5. Tin ore in large rolled fragments from New England (see my report on the tin fields of New South Wales).

No. 6. Auriferous quartz from Tipperary gold mine, Otago, New Zealand.

No. 7. Model of gold nugget, from Australian Museum; weight, 28 ounces 17 pennyweights; found in alluvial deposit at Mount Brown, Albert gold field, New South Wales, March, 1888.

No. 8. Model of Lyee Moon nugget, from Cadia copper mines, near Orange, New South Wales. This nugget was found, with several other of lesser size, at about 20 feet sinking. Mr. H. W. Newton, who presented it to the Lyee Moon Shipwrecked Fund, says: "I have two others from the same place, each weighing from 12 to 15 ounces."

No. 9. Model of Maitland Bar nugget, found at Hargraves, 190 miles northwest of Sydney, at a depth of 5 feet from the surface. The gross weight of this magnificent specimen is 344.78 ounces; quantity of gold of specific gravity, 313.09 ounces, valued at the Sydney mint at £1,236 14s. 1d. (\$6,017.43).

No. 10. Model of large Cadia nugget, obtained at Cadia, near Orange, New South Wales, 190 miles west of Sydney; gross weight, 70 ounces.

No. 11. Model of Temora nugget; gross weight, 168 ounces 12 pennyweights; found at Temora, New South Wales, 260 miles south of Sydney, in 1884. The under secretary of mines reports that in one year there were found ~~varying~~ in weight from 5 to 175

No. 12. Gossan; found at the Bulga mine, near Orange, New South Wales, in 1887, at the beginning of the first working. There are three valuable gold mines in the neighborhood, viz, the Ophir, Forest, and Wentworth.

No. 13. Native antimony, from the New Reform gold mine, on the main road from Bathurst to Orange, New South Wales, 200 miles west of Sydney. Professor Liverversedge, in his valuable and interesting work entitled "The Minerals of New South Wales," published in 1882, says that he has been unable to find any authentic record of native metallic antimony having been discovered in New South Wales (native antimony, however, has since 1882 been found in various parts of the colony). Antimonite stibnite or antimony glance is found on the Clarence and Patterson Rivers, in mineral veins, in massive state and, occasionally, in rolled crystals. A specimen of antimonite from Wellington district was analyzed by Professor Liverversedge, which showed 67.74 per cent. of metallic antimony, with traces of silver and gold. The under secretary of mines states that ore containing antimony, gold, and silver can not be treated locally and is sent to Europe for treatment. Dr. Claudet, assayer of the Bank of England, gives the following analysis of New South Wales antimony ore sent to him for examination: Antimony, 61.50 per cent.; gold, 3 ounces 12 pennyweights; silver, 1 ounce per ton. Messrs. Johnson, Motley & Co.'s analysis of New South Wales antimony was 41 per cent.; gold, 2 ounces per ton.

The subjoined table, furnished me by the under secretary of mines, shows the results of various assays of this mineral at the mines department during 1887:

Locality.	Description.	Antimony, per cent.	Gold, per cent.	Silver, per cent.	Lead, per c't.
			<i>Oz. dwt.</i>	<i>Oz. dwt.</i>	
Bellinger River.....	Sulphide of antimony, Peckett Hill	69.97			
Coolongolook	Stibnite and quartz, from Wanga, 6 miles from Coolongolook.	31.29			
Carangula	Stibnite and a little quartz.....	61.55	0 5		
Carangula	Stibnite and cervantite	45.0	0 5		
Crudine	Breccia, from Crudine antimony lode.....	48.8			
Gulgong	Antimony oxide	68.9			
Gulgong	Antimony breccia, from head of Forl's Creek	36.3			
Gulgong	Stibite and a little quartz, from 2 miles from Gulgong.	27.5			
McDonald River...	Quartz and stibnite, from the head of the McDonald River.	43.75			
Marulan.....	Sulphide and oxide of antimony with lead and quartz, Carrington mine.	16.75	2 17	164 3	22.27
Razorback.....	Oxide and sulphide of antimony and a little quartz, from between Razorback and Cru- dine Creek, about 9 miles from Razorback.	67.30			
Razorback.....	Ferruginous sulphide and oxide of antimony, from Back Creek, about 8 miles from Ra- zorback.	55.33			
Sofala	Quartz and stibnite.....	46.3	0 14½	0 7½	
Shoalhaven.....	Quartz and stibnite.....	28.52			
Talbragar	Oxide of antimony.....				

No. 13. Tin rock, composed principally of quartz feldspar, decomposed feldspar, silicate of alumina yellowish, and oxide of tin, from New England district.

No. 14. Tin-stone cassiterite; New England, New South Wales. This stone contains 78.67 per cent. of tin and 21.33 per cent. of oxygen. In the same district are found very many well-developed crystals of tin of large size.

No. 15. Mount Pleasant, Fairfield, New England, New South Wales ore. This specimen, although showing no gold to the naked eye, is out of a lot yielding from 60 to 100 ounces per ton.

No. 16. Chloro-bromide of silver, from Lewis' Pond mine, New South Wales, at 87 feet level; assay, 79 ounces silver and 1 ounce 11 pennyweights 14 grains gold; sample assay, 1,200 ounces of silver to the ton.

No. 17. Schist, containing pyrites, gold, and silver from western wall of Lewis' Pond lode, 40 feet in width.

No. 18. Decomposed quartz, containing chloride of silver, out of drive bottom of wing, 117 feet northwest, Lewis' Pond mine, assaying as high as 5,000 ounces of silver to the ton; average assay of ore, 90 ounces of silver and 1 ounce 3 pennyweights of gold.

No. 19. Gray carbonate of lead; Lewis' Pond mine, New South Wales; bulk assay, 105 ounces of silver, 7 pennyweights 3 grains of gold, and 48 per cent. of lead.

No. 20. Marble, from Lewis' Pond mine, used as flux. All the Lewis' Pond specimens, with the exception of No. 3, were furnished me by Mr. J. B. Beauregard, an American citizen, who for a number of years has taken great interest in Australasian minerals. Mr. Beauregard was one of the original promoters of the Lewis' Pond Mining Company, and is now the largest shareholder in it.

No. 21. Marble, from Oaklands, Macleay River, 250 miles north from Sydney. One of the specimens has been polished at the department of mines, and shows with fine effect the variegated colors of the shell-like formation. Mr. Enoch Rudder, to whom I am indebted for these specimens, says they were taken from the limestone formation of the south bank of the Macleay River. The formation extends from Piper's Creek to Willi Willi, a distance of 30 miles. Mr. Rudder says, further, that the marble will admit of quarrying for it on an extensive scale and that the seams are free from flaws. The country north of the limestone is composed principally of shale, and to the south of conglomerates.

No. 22. Pyrites, from Broken Hill Proprietary Company's property, New South Wales; a very rich specimen.

No. 23. Zircon; Tilbuster Creek, New England district, New South Wales.

Canes Creek, near Inverell, New South Wales, 383
in the

much to promote the mining industries in Australia, is of opinion that the matrix of the diamond starts in the dividing ranges, and that the stones found have been washed therefrom. The heavier drifts, he says, have not yet been reached. All the gem stones as yet discovered in New South Wales, with the exception of the diamonds, have little or no commercial value.

No. 25. Mount Morgan ore, from Mount Morgan gold mine, Queensland. This ore is very dark and shows very little gold, but the mine from which it is taken is one of the most celebrated in the world. It is situated on the River Dee, 25 miles from Rockhampton, Queensland, and is literally a mountain of gold. Once the cup of a geyser, the hill or mount has been built up by the mineral deposits of the water. The value of the shares of the company working the mine is estimated at £10,000,000 (\$48,665,000). There are no underground workings or shaft sinkings, only ordinary quarrying, and all the stuff yields by average not less than 3 or 4 ounces of gold to the ton. (See descriptions of Mount Morgan mine in my report on Australasian Gold Fields, Consular Reports, 1887.)

No. 26. Phacolite and Phillepsite, from Collingwood, Victoria.

No. 27. Fossiliferous marl, near Hamilton, Victoria.

No. 28. Stream tin; Bridgewood mine, Uralla, New South Wales, 300 miles north of Sydney.

No. 29. Lignite, from Inverell, New South Wales.

No. 30. Fossiliferous marl clay; Muddy Creek, near Hamilton, Victoria.

No. 31. Phacolite; Collingwood, Victoria.

No. 32. Iron ore; Mittagong district, New South Wales. The deposits at Mittagong occupy an area of 37 acres. They occur in five different localities, situated in a radius of $4\frac{1}{2}$ miles from the old Fitzroy smelting works, near the town of Mittagong. The deposit of ore at Fitzroy occupies an area of 4 acres, and is estimated to contain 439,000 tons, which would yield 179,940 tons of pig-iron. Coal of good quality has been found close to the deposit of iron ore. Deposits of iron exist in the Goulburn district and elsewhere in New South Wales, especially in the mountain districts. It is found at Wallarawang, Mount Lambie, Mount Tama, Mount Kiera, on the coal ranges of the Clarence River, and in the Bogan River Valley. The ore occurs in the form of magnetite or magnetic oxide and as brown hematite. The former is the richest of all iron ores. It is stated that the clay-band deposits, which in New South Wales are brown hematite, contain on an average 50 per cent. of iron, while the English clay bands are carbonates, and average only 30 per cent. of the metal. The following is an analysis of a sample of ore from Wallarawang, New South Wales:

	Per cent.
Ferric oxide.....	75.52
Ferrous oxide	1.01
Phosphate oxide	38
Sulphur	03
Silica.....	

MINERAL LEASES.

The mining laws of New South Wales are encompassed with many difficulties. For instance, the Government lands can not be purchased outright for mining purposes, as in the United States, but is obtained by a system of licenses and leases. Authority to dig for gold here costs 10 shillings (\$2.43) per year, and it gives the possessor a right to take up ground for mining, in a town a quarter of an acre, or outside of a town an acre of land, for a business site. Mineral licenses are also obtained at a cost of £1 (\$4.86) per acre, entitling the holder to from 40 to 640 acres of Crown land, for the purposes of searching for minerals other than gold. The laws regulating the rights of miners are so complicated that a determined effort has been made during the last few years to reform them. It was very difficult for a miner to understand the question of forfeiture, or to obtain information as to what land he could occupy. At the beginning of the present year the Hon. Francis Abigail, minister for mines, caused to be published in the Government Gazette particulars of all gold-mining leases of Crown lands in force in the colony on December 31, 1887. The mineral acts under which these tenures are held are given in detail. The publication, notwithstanding its great value, is too voluminous to be reproduced here, but I have, with the assistance of Mr. James Wilson, of this city, who has given much study to the land laws of Australia, prepared the following summary of these leases. Some idea of the amount of time, study, and labor employed in the preparation of the summary can be formed from the statement that it was necessary to take up in detail all the various land acts of the colony, and separate the number of leases under each act from 1861 to the present time.

It will be seen from the following table that the public can arrive at a general knowledge of land held under lease, while the dates of these leases afford an indication of the length of the present tenure and their general conditions, as specially provided in all the acts. It is well enough to mention here that the leases may be renewed when the time for which they are held shall have expired. By the mining act of 1874 mineral leases are subject to 5 shillings (\$1.21) per acre per annum rent, payable in advance on or before the 30th of November of each year, subject to continuous working, the employment of a certain number of hands, and the expenditure of a sum not less than £5 (24.33) per acre during the first three years, and the employment of an additional number of hands for the remainder of the lease. The duration of leases for minerals, other than gold, may be for any period not exceeding twenty years, but may be terminated upon giving three months' notice to the minister for mines, but no rental is returned. A gold mining lease may be granted for a term not exceeding fifteen years, and the rent, payable yearly in advance, is at the rate of 20 shillings (\$4.86) per acre, and a royalty as may be prescribed, and under such covenants

Summary of analysis of leases printed for public information in the Official Gazette of New South Wales, April 19, 1888, in force December 31, 1887.

Description of title.	No.	Area.	Leases dated from —														
			Ante.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.		
		A. R. P.															
al leases under act of 1861.....	11	2,641 1 33	4	7													
al leases, mining act of 1874.....	977	35,662 1 33	1	2	8	5	11	20	40	24	64	160	251	341		50	
orted authorities, mining act of	10	20,164 0 19											10				
al leases under amendment act	265	10,386 2 5															
884.....	1,263	68,854 2 10	5	9	8	5	11	20	40	24	67	182	392	440		60	
Total mineral leases.....																	
ining leases, act of 1874.....	504	3,447 3 21	3		5	4	4	24	15	31	43	43	98	227		7	
ining leases, act of 1884.....	49	302 2 36										3	10	36			
Total gold mining leases.....	553	3,750 2 17	3		5	4	4	24	15	31	43	46	108	263		7	
Grand total.....	1,816	72,605 0 27	8	9	13	9	15	44	55	55	110	228	500	703		67	

NOTE.—Also three leases under gold fields act of 1866; area, 2,300 yards; dated 1877.

By the act of 1884, now in force, leases for mining for minerals other than gold were issued under regulations of March 16, 1866. Such leases are subject to a rental of 2 shillings (48 cents) per annum per acre, and at less rates without the right to occupy surface ground. On May 2, 1888, the Government issued regulations repealing the regulations of March 16, 1866, and substituted the following: 1. To occupy the surface, or some portion thereof, are subject to 5 shillings (\$1.21) per acre rental. 2. Without right to occupy any surface, may be reduced to 2s. 6d. (61 cents) per acre rental. 3. For land wholly under water, 1s. 6d. (36 cents) per acre rental. 4. For coal mining, as per one, two, and three, 2 shillings (48 cents), 1s. 6d. (36 cents), and 1 shilling (24 cents), respectively. For gold mining, 20 shillings (\$4.86) per acre per annum.

Subject to royalty.—Special leases for gold mining are provided for a term of not less than one year, and, in extent of land, demised in proportion to the number of men to be employed, as specified in the application and proposed machinery, not exceeding 2 acres for every man employed and 1 acre additional for every £200 (\$973.30) expended in machinery, etc., provided that the area shall not exceed 100 acres. These terms seem to be for the encouragement of prospecting for minerals. The labor conditions and term of lease are specified in every lease, and on failure to comply with any or all conditions the lease may be canceled. The mining acts are locally administered by wardens and assessors.

The Government has intimated its intention to introduce a new mining bill to repeal the existing acts and place the mining industry on a better footing with regard to private property, gold-field reserves, etc.

MINING MACHINERY AND APPLIANCES.

The imports of mining machinery into New South Wales have largely increased during the last ten or twelve months. Heretofore this colony has been more backward in the use of this kind of machinery than Victoria, Queensland, and other portions of Australasia; but the outlook is much brighter now, on account of the new impetus given to mining industries in every part of the colony. Until recently all the gold mining was confined to surface or surface reef mining, and when such mines were worked to a certain point, mainly to a water-level, or beyond the reach of oxydation, they were invariably abandoned. In fact, it was not until the discovery of silver ore, and the American method of treating it, that anything approaching mineral research was attempted here. In Victoria the value of gold-mining machinery is estimated at £1,797,925 (\$8,749,751), of which £1,477,796 (\$7,191,473) is used in quartz mining alone, and the remainder, £320,129 (\$1,557,627), for alluvial mining. In New South Wales, however, the value of both quartz and alluvial gold-mining machinery is

and other dealers in mining machinery, report that there is a steady demand for American rock drills, concentrators, amalgamators, etc. The concentrators introduced here from the United States can be applied with equal success to dressing all kinds of ores. The dressing surface of one, called "The True Vanner Machine," consists of a flanged rubber belt, which revolves slowly against a descending stream of sand and water, and receives a continuous lateral vibratory motion that keeps the whole volume of sand and water in gentle movement.

Mr. George G. André, F. G. S., member of the Society of Engineers of London, in a recent paper states that the side motion of the belt, the vanning, is the most important feature of this machine, and, in connection with the perfect surface of the rubber belt itself, is the real element of the success of the vanner. The Brunton belt, in England, and the Hoffman, in Germany, are known as slime dressers. The first is merely a self-discharging inclined plane in principle; the last, receiving in addition a succession of blows, is an improvement on the former, being an intermediate stage between it and the present vanning machine. The difficulty in making the belts last in the Hoffman machine was, according to the statement of the well-known manufacturing firm at Kalk, near Cologne, the reason of the belt dropping out of use. In the True Vanner no such difficulty occurs; the belt is of long duration, the only appreciable wear being caused by the attrition of particles of ore passing over its surface with the water, and this wear, which is slight, is remedied by the occasional application of a liquid rubber paint. That the lateral motion is in itself preferable to percussion few practical dressers will deny. The capacity of the machine is from 5 to 8 tons of rock per twenty-four hours. The True Vanner is recommended in all cases except where chlorides predominate.

A number of concentrating machines have been manufactured in Victoria and in this colony after American patterns, several of which are used at Mort's dock in this city, but they are much more expensive than those made in the United States. I have not heard of any colonial concentrators being used in the mining districts.

A machine called the "Alve's Patent Gold and Pyrites Concentrator" has been tried at the Eureka mine, south Australia. The following is a description of it: At the end of, and attached to the ordinary tables, are boxes about 6 feet in length and 2 feet in breadth; two rows, of four each, are placed side by side. The first of these boxes has a fall of $2\frac{1}{2}$ inches to 1 foot. The heavy "slime pyrites" is generally found on this box. The next box or table has a $\frac{1}{4}$ -inch less fall; the next has about $1\frac{3}{4}$ inches, and the next $1\frac{1}{2}$ inches. The bottoms of these tables are covered with a strip of baize; each table is divided so that the water course, instead of being 2 feet wide, is about half that width. Placed on the top of the baize are wire frames, two to each table, about $1\frac{1}{2}$ -inch mesh, and so woven that each corner of the mesh is alternately high or low. The action of water passing

while the heavier portion settles. About 80 per cent. of the gold remains on the first table. Each table of either row or set is fitted alike. The water at the head of the tables is so regulated that it flows through small apertures on each table. Every hour the strips of baize mentioned are washed. A "plug" suffices to stop water flowing on the blanket about to be washed. A trough placed at the end catches water, etc., from all the tables, carrying it to the amalgamator. The concentrating portion presents a new and important feature by the addition of wire frames, and many thousands of "ripples" are caused thereby. Anything which will precipitate remains on the blanket in ripples. Another noticeable feature is the lesser fall allowed each succeeding table, the heavier portion pyrites remaining on the first table having a fall of $2\frac{1}{2}$ inches to 1 foot from that. The residue, of course, being lighter, its course for the next 18 feet is retarded accordingly. The Parnell process, for the treatment of pyrites and refractory ores without chemicals, which has attracted more or less attention here during the last ten years on account of its repeated failures, is now, it seems, in a fair way to prove successful.

A company has been started in London for the purpose of manufacturing the machinery for the process on a large scale. A testing plant has been established at Pymont, near Sydney, and its working is said to give every satisfaction. The process is the invention of an Australian lady, Mrs. E. B. Parnell, who is now in London superintending the interests of the company. I visited the testing plant at Pymont on Tuesday, the 7th instant, with Mr. W. B. Henderson and several other mining experts. The manager, Mr. E. C. Davis, took great pains in explaining the working of the plant, which he pronounced to be a complete and perfect model of mechanism. There appears to be as many as seven or eight different appliances, all of which have been patented in the colonies and in various European countries. One or two of the appliances have also been patented in the United States. Mr. Davis informed me that the business carried on at Pymont is purely a testing one, and for the purpose of exhibiting the results to mine owners who send their ores to Sydney for treatment. The result in gold is paid for at mint prices, after deducting the cost of labor and material. Certificates of fire assays and of the results of the working trials are issued to the mine owners. The plant appeared to work smoothly in every part. Upon the ground were a considerable number of bags containing pyrites, tailings, and other material, not usually regarded as of any special value by New South Wales miners, waiting to be operated upon, and the manager stated that larger consignments were expected during the week. The ore operated upon during my visit averaged 76 ounces of gold to the ton. The following table, which I have been permitted to copy from the register of the company, shows in detail the results of the working trials at Pymont, Sydney, from November 3, 1885, and the colony from

Working trials and results of treatment of pyrites, etc., under the Parnell process, done at the works of the Parnell Pyrites Patents Co., Limited, Pyrmont, Sydney, New South Wales.

Date.	Mine.	District and colony.	Weight of con- signment.	Contents by fire assay per ton of ore.	Result of treatment per ton of ore.	Value per ounce.	Remarks.
1885. Nov. 3	Black Jack Gold Mine Company.	Ravenswood, Queensland	T. Cwt. Grs. Lbs. 2 0 0 0	Ozs. Dwt. Grs. 5 10 10	Ozs. Dwt. Grs. 5 5 20	£ s. d. 4 1 6	This was heavily charged with copper and zinc- blende. The loss amounted to 4 dwt. 18 grs.
1886. Jan. 28	Unknown	Orange, New South Wales	1 0 0 0	28 14 20	28 11 10	3 19 0	A good deal of blende, arsenic and sulphur; no copper; loss, 3 dwt. 10 grs.
Feb. 9	do.....	Bundaberg, Queensland	1 0 0 0	1 6 0	1 6 18	3 15 0	Tailings, unconcentrated; loss, 1 gr., and was the first parcel through the present plant.
Feb. 17	United Miners (tailings)	Braidwood, New South Wales..	5 0 0 0	1 7 19	1 4 0	3 12 6	Poor in gold; heavily charged with copper and zinc-blende; valuable to show how closely refac- tory pyrites can be treated; loss, 3 dwt. per ton.
Mar. 31	Sunny Corner (tailings)	Bathurst, New South Wales....	2 0 0 0	1 5 10	1 4 0	3 17 5	Worth concentrating if they can be purchased; loss, 1 dwt. 10 grs. per ton.
Apr. 24	Unknown	Berrington Diggings, Copeland North, New South Wales.	0 2 2 20	14 17 2	14 13 8	3 15 0	Arsenical pyrites concentrated; loss, 3 dwt. 18 grs. per ton.
May 7	New Reform	Orange, New South Wales	2 8 3 8	4 11 11	4 4 10½	3 15 0	Magnetic iron carrying neither arsenic nor sul- phur, and bad to treat; loss, 7 dwts. per ton.
May 30	Unknown	Rockhampton, Queensland.....	0 2 2 20	212 2 19	212 1 16	4 4 0	Ironstone, much resembling the ore from Mount Morgan; loss, 1 dwt. 3 grs. per ton.
May 37.	Iron-clad	Cargo, New South Wales.....	5 3 0 0	1 4 13	1 2 11	4 0 0	This ore had already been treated by chlorination; loss 2 dwts. 2 grs. per ton.
May 23	.....	The following parcels were under one hundred-weight.					
May 25	Unknown	Adelong, New South Wales....	.....	1, 143 16 3	1, 143 14 0	3 17 0	This sample was antimony; loss, 2 dwts. 3 grs. per ton.
May 31	Sir Garnet Wolseley ...	Sofala, New South Wales.....	.....	16 6 5	16 3 18	3 18 6	} Arsenical with zinc; loss, 2 dwts. 11 grs. per ton. } Red gossan ore, containing some ounces of silver, } but only worked for gold; loss, nil.
May 15	Lewis Ponds	Orange, New South Wales .....	.....	4 1 15	4 1 15	3 19 0	
May 20	do.....	do.....	.....	4 15 6	4 15 6	3 19 0	
May 25	Dargues	Braidwood, New South Wales.	.....	5 8 21	{ Gold, 4 4 1 15 } { Silver, 1 5 0 }	.....	Unconcentrated ore; loss on bullion assay, 2 dwts. 6 grs. per ton.
May 28	.....	.....	.....	.....	.....	.....	Was very good for treatment; loss, 1 dwt. 3 grs.
May 9	Unknown	Nowra, New South Wales.....	.....	4 1 15	4 0 12	.....	A good deal of copper and zinc; loss, 3 dwts. 2 grs.
May 10	Iron-clad	Cargo, New South Wales.....	.....	70 15 12	70 12 10	4 0 0	A good deal of copper and zinc; loss, 2 dwts. 16 grs.
May 12	do.....	do.....	.....	68 1 2	67 18 10	4 0 0	A good deal of copper and zinc; loss, 1 dwt. 8 grs.
May 12	Sir Garnet Wolseley ...	Sofala, New South Wales	0 10 0 0	57 9 9	57 8 1	4 0 0	This was a lot of blanketing fairly good to treat; loss 3 dwts. 3 grs. per ton.
May 12	.....	.....	.....	4 15 23	4 12 20	3 18 6	.....

It will be seen from the preceding table that the ores operated upon were in most cases of an unusually refractory nature. Mr. S. S. Vale, late superintendent in New South Wales of the English and Australian Copper Company, Limited, in a recent report states that the Parnell process was designed for the treatment of all highly-sulphurous ore or pyrites containing sulphides of various metals, such as iron, copper, zinc, etc., and also arsenic carrying gold and silver, which have hitherto proved intractable, or so much so as to render it impossible to obtain the whole of the gold contents. It is claimed by the company that the cost of treatment is very moderate and does not exceed £1 10s. (\$7.29) per ton of ore. In a large plant it would be about £1 5s. (6.08) per ton. The plant is said not to be adapted to ores containing a considerable amount of lead. Ores composed of arsenic, sulphides of zinc, copper, and iron, Mr. Vale says, were never before treated so successfully as in the Parnell process, and that no better method could well be devised for the treatment of pyrites from gold-bearing quartz, as by ordinary crushing the fine gold can be obtained by amalgamation, and the tailings passed over concentrators and the pyrites gathered and treated on the ground.

The process consists, first, in calcining the ground pyrites to expel arsenic and free sulphur and to convert iron, copper, and zinc into sulphates soluble in water; second, lixiviation in boiling water to dissolve the sulphates, which are removed by filtration and the residue washed, leaving the gold free for amalgamation; third, amalgamating the cleansed matter in the usual way. It is claimed that any metals of sufficient value in the pyrites, such as silver and copper, can be saved without difficulty. One of the appliances connected with the process is a quicksilver-saving apparatus. When large masses of galena are associated with the pyritous ores, the ore is hand sorted and the galena is coarsely crushed and roasted separately from the pyrites. Antimony ores containing gold are also coarsely crushed and roasted to oxidize the antimony, and the residue boiled and treated to recover the gold. The operations of the company will be watched with no little interest throughout Australasia, as the process deals especially with material which has hitherto been regarded as unworkable. — SYDNEY, NEW SOUTH WALES, May 14, 1888.

G. W. GRIFFIN,

Consul.

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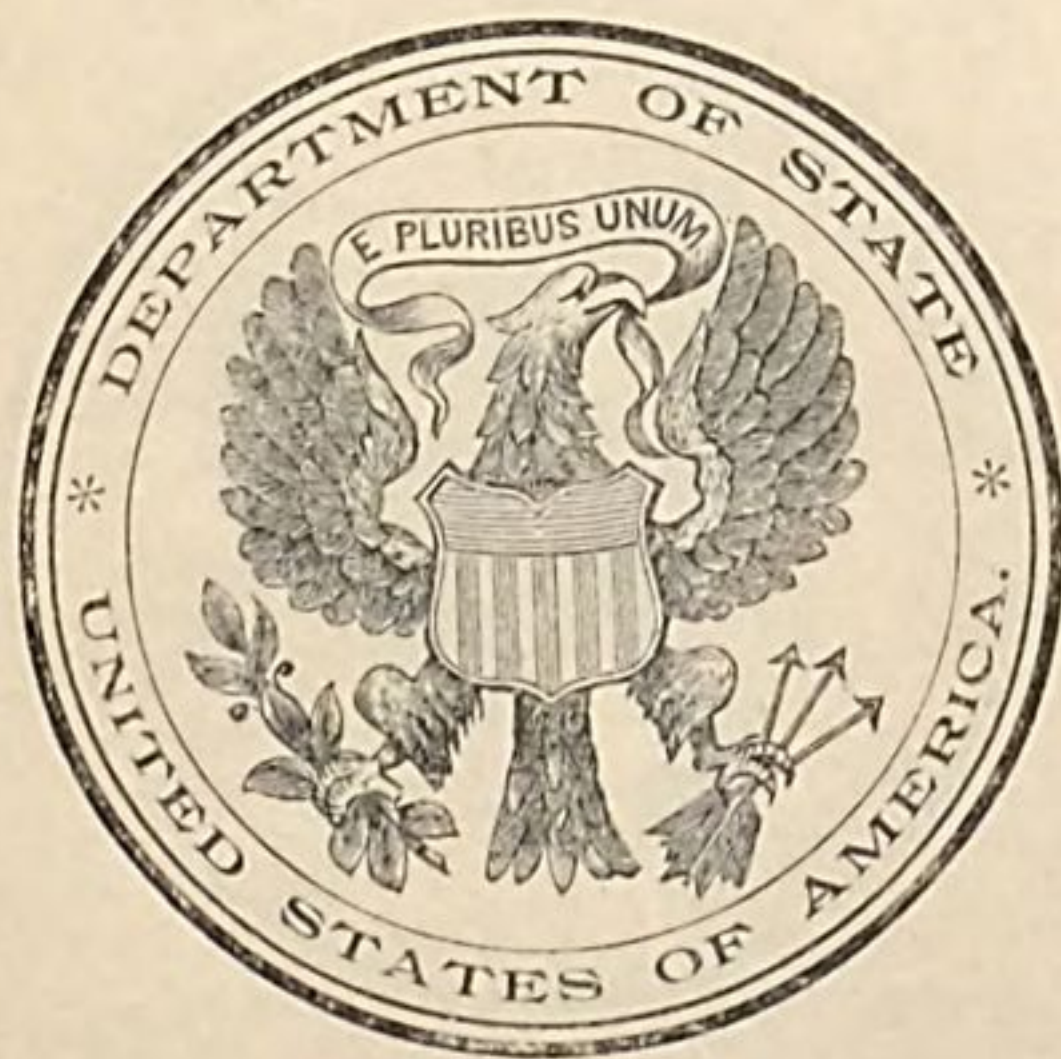
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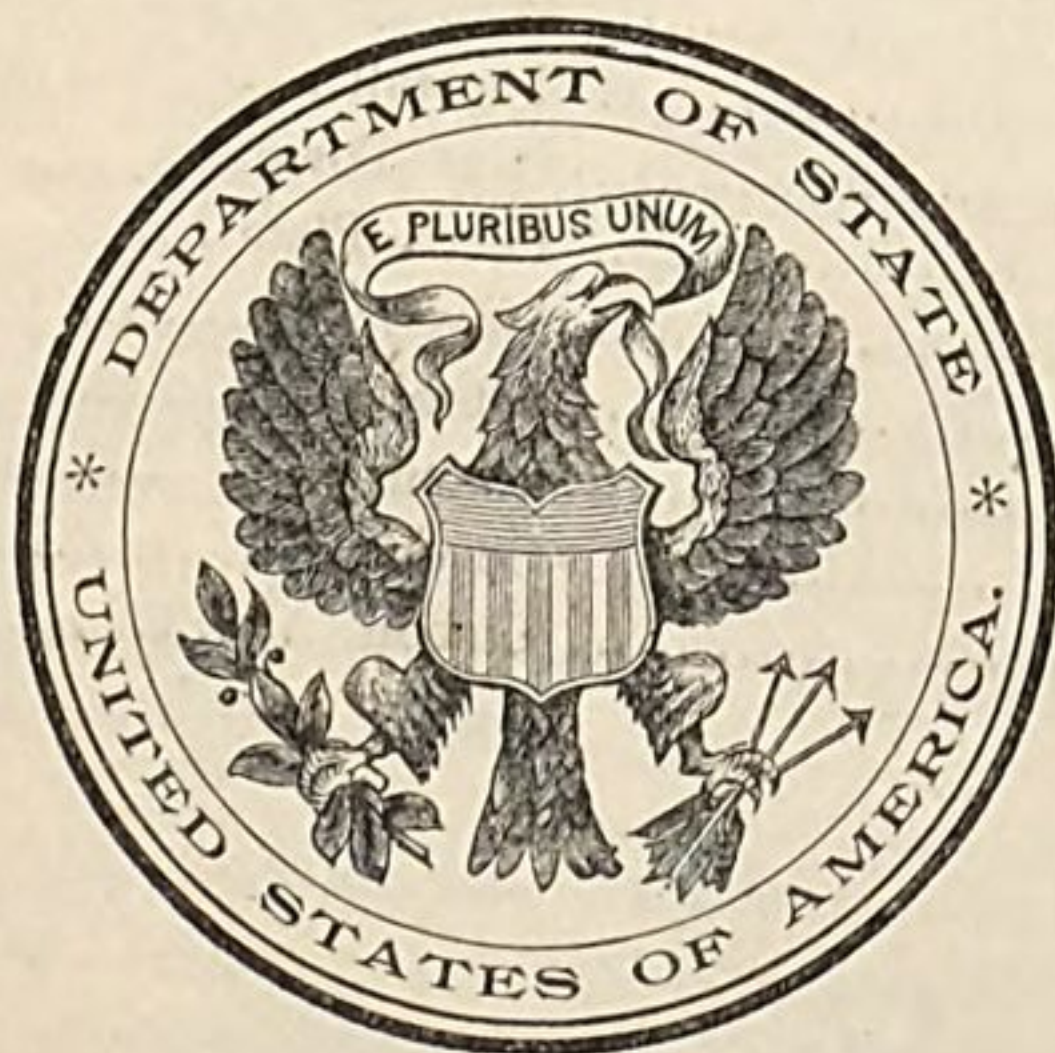
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WEIGHTS, MEASURES, AND CURRENCY MENTIONED IN THESE REPORTS.

Name.	Country.	U. S. equivalent.
Centner	Germany	110.230 pounds.
Cwt	England	112 pounds.
Feddan	Egypt	1.038 acres.
Franc	France	19.3 cents.
Hectare	France	2.471 acres.
Hectoliter .....	.....	26.417 gallons.
Kilogram .....	.....	2.204 pounds.
Liter .....	.....	1.0567 quarts.
Mark	Germany	24 cents.
Milreis	Portugal	\$1.084.
Öre	Sweden	100 öres = 1 crown = 26.8 cents.
Peseta	Spain	19.3 cents.
Picul	Siam	133.35 pounds.
Pound	Egypt	\$4.9641.
Pound	English	\$4.86.
Ruble	Russia	55.9 cents.
Rupée	India	33.2 cents.
Sol	Peru	96.50 cents.

CONSULAR REPORTS

ON

COMMERCE, MANUFACTURES, ETC.

No. 95.—JULY, 1888.

COST OF MANUFACTURING WORSTED COATINGS.

The manufacture of worsteds for men's wear has of late years taken a great rise, much to the detriment of goods made of carded wool, cassimeres, etc. The advance made in the improvements of combing machinery, by which wools of almost any length can be combed and used for worsted manufacturing, has undoubtedly contributed much to this end. Formerly only long staples were used, and this gave the English quite an advantage, whose breeds were principally supplying the material. But now the manufacture of worsteds has gone abroad, and is largely conducted in other countries as well as in England. It is not saying too much to declare that England is still holding an advanced position and is doing perhaps more of an export trade in worsted cloths than all other exporting nations combined. This is undoubtedly due to the many advantages derived from the early knowledge and practice of the manufacturing processes, which have become hereditary with the working classes and the manufacturers and produced a keen adaptation and a subdivision of the labor processes, so that by a "rule of thumb" method better results are realized than in other countries by perhaps more studied methods.

In the United States naturally much attention has been paid to the domiciliation of this industry. The difficulties were manifold. First, an inferior knowledge of the manufacturers and their staff compared to the thorough training the English manufacturers and managers had.

the absence of a trained class of operatives, such as Yorkshire abounds in. It is one thing to make carded, soft wool goods and quite another to make combed wool goods where the flaws and imperfections all lie and show on the smooth surface and can not be covered by a deceiving woolly face, especially so when you are limited in the choice of your wool. I well remember the early struggles of the industry, and the New York auction houses undoubtedly do also. But, as in so many other things, the manufacturers have not stood idly by, but by hard work and perseverance have succeeded in overcoming a great many of the seemingly insuperable difficulties, and with free wool, and a consequently greater range of selection, would undoubtedly in a very short time be on a footing far above any that they can ever expect to gain otherwise. The samples of American worsteds which I have brought over for comparison astonished English manufacturers and received great praise from them. A comparison of the manufacturing cost seemed to me, before I entered into a searching inquiry, to be hazardous, however, and to prove very likely what was so tersely expressed by the late Horace Greeley, when he invited a visitor to a choice between a glass of milk and a glass of champagne, "Both cost the same," he said, "the wine is imported, the milk is raised on the farm." How disappointing such forecasts are will be learned from the following comparative statement of cost. The inquiry I began about two years ago; but I found so many points to look into, so many statements to compare and to verify in America, and *vice versa*, that only now I am able to bring the investigation to a close. The goods selected for comparison are 16-ounce 6-4 black corkscrew worsted coatings, well known under this name and an article of universal use.

A.—THE AMERICAN GOODS.

1. The goods are made in the neighborhood of Philadelphia. I was told by different manufacturers there that wages were higher in and around Philadelphia than in Rhode Island or the Eastern States generally. Indeed, I was told that in textiles Philadelphia is the dearest labor market on account of the diversified industries and the great demand for labor. I do not express my own opinion on this score, but simply repeat information. Partly also to the fact that in the Eastern States a greater number of skilled operatives can be found than in Philadelphia and the cost of production correspondingly decreased in consequence.

The mill manufactures worsteds alone. The wool is bought in the grease and goes through all the manufacturing processes in the mill. The following account is for the goods mentioned, 16-ounce corkscrew, 55 inches wide, 100 picks to the inch.

The wool is XX Ohio. Two and three-quarter

1887), at 34 cents per pound, \$93.50; less $23\frac{1}{2}$ pounds of noils, at 40 cents per pound, \$9.40; net cost of wool in 100 pounds of yarn, \$84.10. The manufacturing cost is as follows:

	Cents.
Wool per pound	84.10
Sorting.....	3
Scouring and carding.....	1.13
Combing.....	2.48
Spinning.....	2.63
Doubling and twisting	2.29
Miscellaneous expense, engineer, and general expense up to and including spinning...	1.32
Total	96.95

Finished yarn, price 96.95 cents; in which wool stands 84.10 cents and labor, including general expense in the spinning department, 12.85 cents. The spinning cost in labor is made up as follows: 14 mules at 550 spindles; output per week, 6,500 pounds of No. 40 yarn—7 men at \$10.50, \$73.50; 14 boys at \$3, \$42; 7 boys at \$2.50, \$17.50; 1 packer, \$3; 1 roller coverer, \$6; 2 waste sorters at \$2.50, \$5; total, \$172.50, or 2.63 cents per pound.

The doubling and twisting employs 20 girls at \$4.50, \$90; 2 girls at \$3, \$6; 8 reelers at \$5, \$40; 1 overseer, \$15; total, \$151 per 6,500 pounds, or 2.29 cents per pound. The combing and drawing employ girls at the rate of \$5 per week.

The weaving, dyeing, and finishing.—The goods are 5,760 ends of 240 warp and single-thread filling. The cost is as follows:

	Cents.
The labor for weaving, paid per yard, is.....	16.2
Warpers, loom-fixers, and overlookers	3.7
Burling.....	.5
Mending.....	4
General weekly wages.....	2.7
Dyeing wages	1
Finishing.....	4.1
Total labor	32.2
Supplies, dye-stuffs, soap, coal, and findings.....	4.2
General expense	1.32
Total	37.72
Cost of yarn.....	96.95
Net total	\$1.34.67

2. *Account of a mill in Rhode Island. Largest proportion of output of worsted coatings.*—The account taken here is the general mill account, and comprises the whole annual product of the mill. It will serve to corroborate account No. 1. Though the goods are not specifically the same, yet the same class of goods are manufactured, and as most items cover the same operations and classifications, a comparison will serve the full object of this inquiry.

Mill account.—Pounds of grease wool consumed:

COST OF MANUFACTURING WORSTED COATINGS.

	Cents.
1. Wages paid to wool sorters, \$7,822.25, per pound carded.....	2.19
2. Wages paid for wool scouring, \$1,351.20, per pound.....	.38
3. Wages paid for wool carding, \$5,611; superintending, \$1,200; \$6,811, per pound..	1.90
Plus 25 per cent. for shrinkage in manufacturing.....	.48
4. Cost of spinning:	2.18
a. Wool yarn, per pound.....	4.2
b. Worsted yarn, per pound.....	
5. Cost of dyeing 452,267 pounds:	
Wages, \$5,686.11, per pound.....	1.25
Twenty-five per cent. shrinkage in manufacturing.....	.31
	1.56
Materials per pound dyed.....	3.05
Shrinkage.....	.76
	3.81
6. Weaving:	
a. Per yard of heavy worsteds.....	15.3
b. Per yard of light worsteds.....	15.3
c. Per yard of overcoatings.....	14.7
d. Per yard of cassimere.....	6.3
	15.3
7. Cost of finishing, burling, mending, etc.....	4.84
8. General expense, superintendence, etc.....	3.5
Total.....	40.34

The wages paid in this mill run as follows:

a. *Carding*.—Overseer, \$25 per week; second hand, \$10 per week; common hands, \$4 to \$8 per week.

b. *Spinning*.—Wool spinning: 1 overseer, \$13.50 per week; 1 second hand, \$10.50 per week; 17 spinners (young men), average, \$6.50 per week. Worsted spinning: 1 overseer, spinning and drawing, \$24 per week; 1 second hand, \$9.75 per week; 31 spinning girls, average, \$4.20; 15 doffers (small boys), \$2.40.

c. *Dyeing* (fourteen in all employed).—One overseer, \$21 per week; common hands, average, \$7.20 per week.

d. *Weaving* (paid by the piece).—The mill employs 73 male and 45 female weavers. The male weavers earn, on an average, \$8.50 per week, and the females \$7.

e. *Finishing, burling, mending, etc.*—Overseer, \$27 per week; second hands, \$10.50 to \$12 per week; common hands, \$7.50 per week; women, burling and mending, \$3.50 to \$4.50 and \$6.

f. *Mechanics*.—Overseer, \$16.50 per week; common hands, \$10.50 per week; carpenters, \$12 to \$13.50 per week.

The yearly product.—The mill produced in the year, for which this account stands, 54,000 shawls, 162,723 yards of worsted coatings, 18,604 yards of overcoatings, 15,472 yards of cassimeres, and 16,123 yards of dress goods.

for shawls, 162,723 for worsted coatings, 18,604 for overcoatings, 15,472 for cassimeres, or a total of 304,799 yards 54 inches wide. The total expense for finishing, burling, mending, etc., is given at \$14,952.89, from which I have calculated the yard expense on worsted as above, according to this computation of yards. The general expense, superintendence, etc., counted as 3.5 cents per yard, but no gross sum given, would represent, according to this, the total sum of \$10,668.

The mill is one of the best managed in the United States. They make their own soap from the wool scourings, have their own repair and machine shops, and an organized fire department, ready for any emergency, though at no very imminent risk of being called out, as the mill is built entirely of stone.

The items of cost compare as follows:

Items of expense.	Philadelphia.	Rhode Island.
	<i>Cents.</i>	<i>Cents.</i>
Wool sorting.....	3	2.19
Scouring and carding.....	1.13	2.76
Combing.....	2.48	
Spinning.....	2.63	4.2
Doubling and twisting.....	2.29	
Miscellaneous expense.....	1.32	.....
Weaving.....	16.2	15.3
Warpers, loomfixers, etc.....	3.7	.....
Burling.....	.5	.....
Mending.....	4	.....
General weekly wages.....	2.7	.....
Dyeing wages.....	1	1.56
Finishing.....	4.1	4.84
Supplies, dyestuff, etc.....	4.3	3.81
General expense.....	1.32	3.5
Total.....	50.67	.....

So far as the direct and distinct statements of the Rhode Island figures go they are a verification of the amount of the full cost given in the first column of the article now under comparison, namely, worsted coatings.

B. — THE ENGLISH GOODS.

If worsteds are manufactured in England on the same plan as in America I have not yet been able to discover the place. Quite a number of establishments, in themselves large manufacturing concerns, are set in motion on the receipt of an order. In quite a number of instances the owner of the weaving sheds is the principal manufacturer and shipping merchant. He may receive his orders from the commission merchant in Bradford or direct from customers abroad. Very often, also, the owner of looms has his establishment away out in the country, and gets his orders and yarns from the merchant, and delivers the woven goods to his customer, to be then sent by the latter to the dyer, and then to the finisher; and after receiving them

merchant then stands in about the same relation to the various subdivided branches of labor and to the goods themselves as the silk merchant or manufacturer of Lyons or Crefeld, who buy the tram and organzine, send it to the dyer, then to the weaver, from the weaver to the dresser, and then ship it. This great subdivision of labor and of processes, of course, insures close attention to all details, thorough practice, and supervision by all concerned and interested, the responsibility of the owner guaranteeing perfect delivery at each stage of proceeding, and each one being, therefore, a check upon the other.

It will be seen at once that concerns conducting all of the various processes, as in America, would, in the person of the owner, presuppose the concentration of much more and varied technical knowledge than seems to be called for in an industrial co-operation, if we may so call the English system, of co-ordinated branches, where from his infancy the master and the manager has had nothing to attend to but his one calling and branch. We have, therefore, five distinct operations, each independent of the other: First, the sorting, usually done by the spinner or the weaver, if the latter buys the wool, and after getting it back from the comber gives it to a commission spinner; second, the combing; third, the spinning; fourth, the weaving; fifth, the dyeing; and, sixth the finishing. Some concerns, but they are the exception, combine the sorting, spinning, and weaving. The weaving division necessarily comprises the burling and mending and other incidental labor. The procedure is, that the wool is assorted into the various qualities, the dung and dirty ends cut off, and then sent to the comber.

The comber scours it, cards it, combs it, and sends it in the condition from which it is ready to be spun to the spinner. He then sends it to the spinner, from whence the yarn goes through the manufacturing process as indicated above.

It is no easy matter to get at the manufacturing cost in the whole from so subdivided a process of working. After much labor, visits to factories, and an extended correspondence, I have at last succeeded in collecting the following authentic facts covering the cost of production of the identical quality of the sample of the goods made in the mill near Philadelphia described above:

Percentage of wool and labor in price.

In answer to a general inquiry as to the cost of wool in a finished piece of 16-oz. corkscrew coating the following figures were given:

In cost of goods.	Wool.	Labor and charges.
	Cents.	Cents.
	24	38

The wools.

The wools used are of all sorts. For the finer qualities, such as my sample is made of, Port Philip is used; but the brands run from Leicester to River Plate. The shrinkage in and quality of greasy wool required for making 1 pound of corkscrew cloth is indicated in the following:

Quantity of wool required for 1 pound of low-priced corkscrew:

	Pounds.	Ounces
Leister Botany, greasy, low.....	1	12
Leister Botany, scoured, low	1	4
For warp Botany, greasy, medium.....	1	1
For weft Leister Botany, greasy, medium.....		14
For warp Botany, scoured, medium.....		12
For weft Leister Botany, scoured, medium.....		10
For warp and weft Botany, greasy, best, like ample.....	2	2
For warp and weft Botany, scoured, best, like sample.....	1	8

The quality under discussion would cost the manufacturer from $9\frac{1}{2}$ to 11 pence in the grease, and the shrinkage would vary accordingly, so that the cost in finished state would in either case be about the same. The manufacturer who gave me a detailed estimate of his cost (see below) is other than the one whose wool estimate is given above. He would take $2\frac{6}{16}$ pounds of greasy wool at 10 pence or 20 cents and bring his wool cost to 2 shillings or 48 cents, same as above. This will vary according to qualities somewhat. A fine quality, heavy weight, 22-oz., costs 75 cents in wool, which is for the 16-oz. 54 cents.

a. The sorting.—The general cost of sorting the wool is given me by a very extensive wool comber as 1 pence or 2 cents a pound. Another firm gives it to me as 3 farthings or $1\frac{1}{2}$ cents a pound.

b. The scouring, combing, and carding.—The comber charges for putting the wool into tops after it is delivered to him as matchings, for English luster wool, $2\frac{1}{2}$ to 3 cents a pound; for Australian luster wool, $1\frac{1}{2}$ to 4 cents a pound; and for soft Australian Botany or what we call Merino wools, 7 cents a pound. Of this cost one-half is given as the cost of labor and the other half is to cover soap, oil, coal, expense, machinery, and profit.

c. The spinning.—The spinner charges for No. 2-40 worsted yarn, 4 pence or 8 cents a pound, and between 4 and 5 cents may be taken as the cost of labor.

d. The dyeing.—The dyeing of a piece of 60 yards in black is done by one of the largest dyeing establishments for 14 shillings or \$3.34. The labor in this is 6 s. 9d. or \$1.62 per piece = 27 cents per yard. The dyestuffs, 3s. 9d. or 90 cents per piece = $1\frac{1}{2}$ cents per yard. The charges and profit, 3s. 6d. or 84 cents per piece = 1.4 cents per yard. Total 5.6 cents per yard.

e. The finishing.—The finishing is mostly done outside and usually at Huddersfield at 3 to 4 pence a yard.

f. The weaving.—The weaving comprises all the manufacturing details.

tioned by the manufacturing and frequently the shipping firm. I have taken it, therefore, for the last itemization.

The goods of the character specified are paid at the rate 13s. 6d. or \$3.28 per piece of 56 yards, which gives about 46 yards dyed and finished goods. As we have in American dealt with the finished length we have to do the same here. Dressing and twisting is paid at the rate of 4s. 6d. or \$1.08; burling and mending is paid at the rate of 4s. 6d., or \$1.08, to which is added the weaving wage of 13s. 6d., or \$3.28 to cover all additional expense of manufacturing. In all, \$8.72 per piece, or per yard 18 cents.

Total English cost.

EXHIBIT I.

	Labor.	Additional cost.	Total.
	Cents.	Cents.	Cents.
Sorting.....	1.5	.....	1.5
Scouring, carding, combing.....	3.5	3.5	7
Spinning.....	4.5	3.5	8
Dyeing.....	2.7	2.9	5.6
Finishing.....	2	4	6
Weaving.....	7.7	} 7.17	17.94
Dressing and washing.....	1.8		
Burling and mending.....	1.8		
	24.97	21.07	46.04
			48
Cost of wool.....			94.04
Total.....			

Another mill account gives me the following details of manufacturing cost :

EXHIBIT II.

	Cents.
Sorting.....	1.5
Scouring, carding, and combing.....	7.5
Spinning, doubling, and twisting.....	10
Weaving, 3s. 6d. for 49 yards.....	6.7
Warping and overlooking, 72 cents per piece of 49 yards.....	1.5
Mending, \$1.20 per piece of 49 yards.....	2.57
General labor.....	2.5
Dyeing, 12 shillings or \$2.88 per piece of 49 yards.....	5.87
Finishing.....	6
Other expenses.....	4
Total.....	48.14

... is approximately

stands for other expenses in Exhibit II is entered in Exhibit I under weaving expense. The two exhibits drawn up in full for all weaving charges compare as 17.94 for I and for II as 17.27. This is certainly as close a proof of the general correctness of information received on the subject as can be expected, especially when we bear in mind that mill accounts here, in woollens at least, are not carried out to such mathematical precision as they are in America. Here in England manufacturers go largely on general rules of ciphering cost. As in manufacturing so in calculating, much of a "rule of thumb" method.

We can now draw a comparison between American cost and English cost in the same line of goods:

Comparative cost of manufacturing 16-ounce 6-4 black corkscrew worsted coatings in England and in America.

Items of cost.	American cost.					English cost.		
	Philadelphia.			Rhode Island.		No. I.		
	Labor.	Other expenses.	Total.	Labor.	Other expenses.	Labor.	Other expenses.	Total.
	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.
Cost of sorting.....	3	.....	.....	2.19	.....	1.5	.....	1.5
Scouring and card'g.	1.13	.....	.....	2.76	}	3.5	3.5	7
Combing	2.48	.....	.....					
Spinning	2.63	.....	.....	4.2	}	4.5	3.5	8
Doubling and twist- ing.....	2.29	1.32	12.85					
Weaving	16.2	.....	.....	15.3	.....	7.17	.....	.....
Warping, etc	3.7	.....	.....	.....	.....	1.8	.....	.....
Burling.....	.5	.....	.....	.....	.....	1.8	7.17	17.94
Mending.....	4	.....	.....	4.84	.....	.....	.....	.....
Weekly wages and salaries.....	.....	27	28.42	.....	3.5	.....	.....	.....
General expenses and sundries .....	.....	1.32	.....	.....	.....	.....	.....	.....
Dyeing wages	1	.....	.....	1.56	.....	2.7	.....	.....
Dyestuffs, etc.....	.....	4.3	5.3	.....	3.81	.....	2.9	5.6
Finishing, etc.....	3.1	1	4.1	.....	.....	2	4	6
Total cost	40.3	10.64	50.67	.....	.....	24.97	21.07	46.04
Cost of wool.....	.....	.....	84.10	.....	.....	.....	.....	48
Grand total.....	.....	.....	134.77	.....	.....	.....	.....	94.04

The English total and the Rhode Island totals would show a higher cost in England if we drew a comparison from the data given. I do not, however, make a comparison, as the Rhode Island figures are only introduced in support of the statement of the Philadelphia manufacturers referred to above. The English totals, corresponding with like items of the Philadelphia account, contain for all operations conducted by outside parties, as in scouring and carding, combing, spinning, dyeing, wages, and finishing, profit for the respective branch, which, whatever that may amount to would be

equal basis. The general charges for weaving in England contain a good percentage of what in America is covered by "general expenses." Both accounts in *the total cost* come close upon one another. The English total cost is apparently increased by the different methods in which manufacturing is conducted. On the whole list, however, if closely examined, in all items (especially in work done outside, such as scouring and combing, spinning, dyeing, etc.), charges will be found credited in America to labor which in England are contained in the middle column—managing expense, weekly wages, etc. Whatever may be the proportion which one item or another may bear upon the first column or the second, it is certain (and upon this total cost a number of accounts in my possession come to nearly unanimous statements) that the total is the charge which goes upon the wool, and both combined make the price of the article which we have to meet in competition. We see, then, when we compare both, that the difference in the manufacturing cost is not very formidable. But were we to grant all the differences in the middle column to balance all possible claims of American manufacture for insufficiency of cost, statement of profits, interest, etc., and take the whole difference of the labor-cost statement as constituting an absolute difference in the cost of production, even then we should have to meet only 15 cents per yard higher cost of manufacturing a yard of fine worsted coatings such as described, and worth at the least \$1 net per yard in England. The wool, however, costs 36 cents more in the pound of cloth, or 2.4 per cent. more, than under a more liberal allowance the labor difference amounts to.

The figures of the comparative statement are very suggestive. It would lead me beyond the intended scope of this report were I to enlarge upon them now. One distinct feature impresses itself upon our observation in this connection—that every branch of manufacture is done more economically in America (the scouring and combing, spinning, dyeing, and finishing), except the weaving. This is due to the fact that in the weaving branch alone individual skill is the greatest requisite, and can not be superseded by mechanical devices, nor have we as yet been able to overcome the higher weekly wages, consequent upon the higher subsistence of our working classes, by giving two or more looms to operate to a weaver, as in dress goods (see report upon the subject), where one loom is the rule abroad.—TUNSTALL,
June 22, 1888.

J. SCHOENHOF,
Consul.

JAPANESE "KOJI."

This description has been written by Professor C. C. Georgeson, an American professor in the Imperial Japanese Agricultural College, at Tokio, to whom the United States minister referred a letter, requesting the information, from Mr. Wm. M. Murtrie, professor of chemistry in the University of Illinois, at Champagne, Ill.

RICHARD B. HUBBARD.

PREPARATION OF "KOJI."

There appears to be some diversity in the methods of preparing this ferment. It is made both in the *sake* breweries and in special *koji* factories, and while the chief features must be alike in all cases the details in the manipulation are varied to suit the accommodations of the works. Thus one of the important points is to provide fermenting rooms in which an even high temperature can be maintained. In *koji* factories these apartments are usually some 15 or 20 feet under ground in some sufficiently dry place, egress being had by means of a shaft, while in *sake* breweries these chambers are frequently arranged in ordinary buildings, the walls being lined with straw mats and mud to prevent radiation. The materials used are water, rice, and *tane* (seed or leaven). The rice usually used is the common starchy kind known as *uruchi*. Glutinous rice (*mochigome*) is not used as far as I can ascertain. The *tane*, which is a most important constituent, is the spores of a fungus, *Eurotium oryzae* Ahlb., and occurs as a yellow powder, which, in a certain stage of the proceedings, is mixed with the rice. It is the substance which, in germinating on the rice grain, changes part of the starch into dextrose and dextrin and gives it the properties of a ferment.

To begin with, the rice must be thoroughly cleaned; that is, the thin covering (*testa*) of the seed must be removed. It is maintained that if not removed the liquids with which the *koji* is mixed are inclined to putrify. The rice is next washed by stirring it in a tank of water till all dust and adhering fine particles are floated off, after which it is steeped for some hours to soften the grain.

The steaming may be done in the ordinary way by means of a steam boiler, but usually the method followed here is of a more primitive nature. A large pot fixed over a furnace is filled with water. Over the mouth of this pot is fitted a tall wooden tub with double bottom, in which the rice is placed and covered with a lid. The bottom on which the rice rests is perforated with numerous holes and covered with a thin cloth to prevent the grain from falling through them, and the lower bottom has one or more large holes. The steam generated from the boiling water in thus passing through this apparatus has the desired effect upon the rice.

The steaming completed the rice is spread on straw mats to cool somewhat, and soon after, when the temperature has fallen to 98° to 100° F., the above-mentioned fungus spores or *tane* are sown upon the mass and thoroughly mixed with it. The exact quantity of spores used is not of so great importance as is their thorough and uniform distribution. The usual amount is very small, about 1½ to 2 c. c. per bushel of steamed rice. The spores used in most factories are obtained in Osaka, but as to the manner of growing them I am not fully informed. Parties interested are loath to part with their secrets. So far as I can learn, however, the rice thus impregnated will in due time mature the plant, and the spores form on the surface of the grains as a yellow powder; when the crop is ripe the rice is dried to a degree, spread upon paper, and then stirred or rubbed till the spores are worn off by attrition and collected on the paper. This process is said to take place chiefly in winter.

After mixing the spores with rice the mass remains in bulk for eighteen to twenty hours, being merely covered with mats. The temperature of the room is not high at this stage. The following day the rice is distributed into shallow

the minimum temperature should not be lower than 75° F., and here either placed on shelves or piled one on the other on the floor. In some cases the rice is sprinkled with water and left standing in baskets for some hours before it is distributed on the trays. In other cases the trays are not deposited in the warm room till toward evening of the second day (the day after sowing the *tane*), and they are then left undisturbed till early in the morning of the third day. In the former case, that is, when the rice is not moistened previous to being put on the trays, the trays are left standing only four or five hours, when the contents of each must be thoroughly stirred by hand, which process is again repeated after another four hours of rest, the second stirring occurring thus toward the evening of the third day. At this stage the fungus grows rapidly and much heat is evolved; the grain becomes opaque, assuming a fibrous texture on the surface and becomes somewhat sour in taste. Now it depends on the condition of the mass whether there is danger of the temperature rising too high if left over night. If that should be the case, then the trays are emptied of their contents about four or four and a half hours after the last stirring and the rice spread thinly on mats to cool. Should it on the other hand be deemed safe to leave it in the trays over night, these are emptied early the following morning, and when the mass has been cooled on the mats so as to check the further development of the fungus it is *koji*.

In the event the rice is moistened before it is put on the trays and left undisturbed until the morning of the third day, as mentioned above, then the mass is stirred at 5 a. m. on that day and again at 9 a. m., and should the development of the plant require a longer time still, then once more at 1 p. m., after which it is spread on mats to cool. At each stirring it is rubbed between the hands to separate grains which adhere together, and the workmen also heap it up on the trays or spread it out in thinner layers according as the temperature is to be increased or diminished. Experience is the best guide for its manipulation. No inflexible rule as to time or temperature is followed. The maximum temperature attained by the mass during the most active period of growth is about 102° to 105° F., or even a little higher at times.

There is a loss of weight during the process of from 10 to 12 per cent. of the rice employed. This is due to the evolution of carbonic acid, which circumstance in turn makes the ventilation of the room necessary in order to make it possible for the workmen to stay there. The usual plan is to insert a perpendicular flue which can be opened or closed at pleasure, so that it extends from the ceiling to the outside air, and an incline or horizontal flue which discharges fresh air near the floor.

BUILDING IN MANNHEIM.

The year 1886 was distinguished by an abnormal amount of business in the building line. This increased many fold in 1887, and in 1888, at the moment of writing, the outskirts of the city are filled with buildings in course of erection. So great has been the increase in new dwelling-houses that men shake their heads, muttering "Es muss ein krach geben" (there must come a crash). The latter part of 1887 and early part of 1888 saw a new water-works set in operation and plans projected for a complete sewer system. Electric lighting has also been introduced and is growing rapidly in favor, especially in the large establishments. Many new dwelling-houses

MOVEMENT OF BUILDING—PRINCIPAL BUILDINGS.

Dwelling-houses in 1887, 142, with 2,496 rooms; in 1886, 120, with 2,208 rooms. Dwellings, including the above rooms (or tenements), 1887, 619; in 1886, 516; among these 34 tenements torn down and rebuilt in 1887 and 30 in 1886. Magazines, factories, etc., 32 in 1887, 27 in 1886. New additions to dwelling-houses in 1887, 336; in 1886, 115, with 1,752 and 1,460 rooms, respectively; or 417 tenements for 1887 and 350 for 1886; among these 63 old tenements torn down and restored in 1887 and 48 in 1886. Workshops, magazines, stables, and shelters, 55 in 1887 and 46 in 1886, of which 14 in 1887 and 11 in 1886 were torn down and re-erected.

Changes in buildings, especially on ells or fronts, 98 in 1887 and 84 in 1886, giving 205 new dwelling-rooms to the former and 178 to the latter; or 75 new dwellings for 1887 and 67 for 1886. Changes in ells and buildings in the rear, 93 in 1887, 78 in 1886, with 127 rooms to the 1887 change and 106 to that of 1886, or 58 new tenements in the one case and 49 in the other. Increased engine-rooms, etc., in 1887, 38; 30 in 1886.

Summary of sales of real estate in Mannheim during 1886 and 1887, with amounts of revenue therefrom: It may be remarked that the city and state impose a tax upon almost every dollar paid out in such sales. During the twelve months of both years there were for 1886 325 and for 1887 364 sales effected. These sales yielded, respectively, 10,872,399 and 15,923,392 marks; taxes, 264,150.29 marks for 1886 and 383,297.67 for 1887.

The crowded condition of tenement houses has been cause for frequent and outspoken complaint. The new movement, marked by a great and rapid increase in dwelling-houses, added to the new and splendid water system and the projected underground sewerage, is going to have a beneficial effect on the city's health, comfort, and morals. Tenements must be cheaper, larger, and better than ever before, so great has the competition grown among house owners. A reaction is expected; but long ere it comes the good will have been done. Capital alone will suffer in smaller returns from real estate.

Since writing the above I have seen a table giving tax receipts from sale of real estate for the ten years ending with and including 1887.

	Marks.		Marks.
1877	144,435.69	1883	165,825.99
1878	99,460.83	1884	143,232.63
1879	100,509.05	1885	225,970.40
1880	113,796.46	1886	264,150.29
1881	132,109.16	1887	383,297.67
1882	140,216.54		

The sum realized from the sales in 1878 was, in round numbers, 4,000,000 marks; in 1887, 16,000,000. A mark equals 23.8 cents.—MANNHEIM, *May, 29, 1888.*

J. C. MONAGHAN.

AMERICAN TRADE WITH BOHEMIA.

From time to time inquiries are received at this office from American manufacturers, or their representatives in the United States, as to the kinds of goods that could find a market here in northern Bohemia, the names of firms dealing in such articles, etc. These inquiries are difficult to answer, as there is no way of learning in advance what American manufactures would sell here, as there are scarcely any to be found in this market. Any information that a consular officer could give on the subject would, therefore, be founded either simply upon his individual surmise or the surmises of various dealers with whom he had discussed the subject, and a conscientious officer would hesitate in affording such unreliable information.

I am convinced that in many articles of American manufacture a good trade can be done in northern Bohemia, and I am equally convinced that there is only one practical method of building up such a trade. Catalogues and prices-current, whether illustrated or not, will have no effect here at present. The people are unfamiliar with our goods and will not buy without seeing them. In special cases merchants are willing to receive consignments and see what can be done in a new line, but they will take no risks themselves.

There are many articles which, in my opinion, would find a ready sale here, such as calendar clocks, fire-proof safes with combination locks, platform scales, parlor organs, hoes, shovels, axes, hatchets, and hammers—but everything must be cheap.

I have never seen a calendar clock in this neighborhood, though hundreds of large, well-equipped offices are in this consular district. Great factories lie in every direction, yet in none of them have I seen an American safe, or anything but the old-fashioned cumbersome lock that requires several keys. One or two American organs are here, but they are of inferior make and convey no idea of the beautiful tone of some of our instruments.

But how are we to introduce these manufactures and a hundred others when the merchants here show apathy in the matter and will do no more than receive consignments, while the American manufacturer contents himself with sending out price-lists. Our merchants dislike to risk consigning goods, and the merchants here dislike to risk receiving a consignment that may cause them much trouble and little or no profit. Our merchants expect to ship their goods and obtain quick returns. In building up a new trade this is impossible.

There are in the United States various commercial companies or agents representing a variety of manufactures. Let such a company, one with the largest number of connections, send an agent here who understands his
in Latin is a sine qua non—or let

samples of such goods as he concludes to handle forwarded to him and exhibited in a warehouse here, which can be cheaply rented.

From this, the largest city in northern Bohemia, trade can be pushed in various directions. When a sale for certain articles is established, there will be no difficulty in getting established houses to take hold of the matter.

In a year, I conclude, the agent would be able to return home, having established a good trade in a great variety of our manufactures.

This is not an agricultural section, and the sale of agricultural implements, except of the smaller kind, would amount to nothing. Great forests of pine trees surround us, and American axes should be used in felling them.

England and Germany supply the hundreds of factories with steam-engines and spinning and weaving machinery. Is it impossible for us to compete with them in this lucrative branch.

The scales used here are of the most clumsy and cumbersome character. Surely we should be able to supply these. All should be graduated in the metric system, however.

The exports to the United States from this district are large, and have doubled since my advent here, and steps should certainly be taken to supply some of the imports in a field where American manufactures are almost unknown. I shall be glad if my suggestions are found practical, and will do all in my power to aid an accredited agent of American manufactures in building up an American trade. — REICHENBERG, *June 7, 1888.*

JNO. B. HAWES,
Commercial Agent.

LIMITED STOCK COMPANIES IN MEXICO.

The law of April 7, published in the *Diario Oficial* of April 10, 1888, fixing the status and responsibility of stock companies in Mexico, is of special importance to those Americans who may now have or hereafter establish such companies in this country. The principal provisions are that the title must simply state the particular line of business for which they exist. For example, the Mexican Central Railway Company or the Mexican Fiber Company are *Sociedades Anónimas* within the meaning of the law. If the name of any shareholder appears in the title of the company he becomes personally responsible therefor. In an anonymous company the liability is strictly limited. Such a company may be organized in two ways; first, by public subscription; second, by two or more persons signing the articles before a notary. In the first sort the following are requisites:

1. The publication of the prospectus.
2. The subscription of the capital.
3. A general meeting to approve and ratify the constitution.
4. The notarial registration.

No company is legally constituted until the capital stock is fully subscribed and 10 per cent. paid in cash. — MATAMOROS, *May 7, 1888.*

INSPECTION OF BUTTER IN FRANCE.

The following, transmitted by Consul Dufais, is a translation of a decree of the President of the French Republic regulating the inspection of butter in France.

According to the law of March 14, 1888, concerning the repression of fraudulent dealings in the butter trade, and particularly according to Article XI, the first paragraph of which reads as follows:

"A rule of public administration shall determine the mode and the conditions of the inspection to take place, particularly for goods in transit, by the customs agents or collectors, of the indirect taxes; the inspection will be free, without obstacles or delays in the forwarding of the butter."

ARTICLE 1. The clerks of the indirect taxes, those of the customs and municipal taxes, and the agents intrusted with the inspection of the halls and markets, duly commissioned and sworn, are authorized to take samples of butter for sale, for transportation, importation, or exportation, in order to examine the purity of the same. The carriers, and the directors and agents of carriers, by land or water, are bound to put no obstacles in the way when required to furnish the samples, and to show the way-bills, receipts, bills of lading, and declarations they may have in their possession. Each sample is taken subject to a special examination (*procès-verbal*).

ART. 2. When the sample is taken from a retailer, a wholesale dealer, a forwarder, a consignor, or a carrier, he must give the name and address of the owner of said merchandise. If the merchant, forwarder, consignee, or carrier will not or is unable to furnish the name and address of the party from whom he has obtained the merchandise, and also if he refuses to sign the certificate (*procès-verbal*), it is to be so mentioned in said certificate.

ART. 3. The samples taken by the agents named in Article 1 are to be put in pots or vases in the presence of the owners of the merchandise, hermetically closed and sealed, and sent immediately to one of the experts appointed in each department by the prefect. The circumstances are to be set forth in the certificate (*procès-verbal*).

ART. 4. Pure butter, mixed butter, margarine, oleomargarine, and grease intended for consumption, forwarded in transit, must be contained in closed packages, and the origin and nature of the merchandise must be conspicuously specified thereon. Upon arriving at the custom-house the packages are to be weighed, corded, and sealed with lead, and a certificate, to be delivered to the carrier or transportation company by land or water, shall accompany the goods until they reach the office of export. The certificate of transit fixes the delay granted for re-exportation.

The ministers of the interior, of agriculture, and of finances are charged with the execution of the present decree, so far as each is concerned.

Done at Paris, May 8th, 1888.

(Signed)

CARNOT.

BANANA CULTURE IN ST. THOMAS.

The Belgian consul at St. Thomas reports that the culture of bananas in that island has greatly increased, in 1887 about 250 hectares being brought under that plant. The Government encourages this extension, offering 20 hectares to every person who will engage in it. The cost is:

	Piasters.
Clearing a hectare of land.....	12
Plants, per hectare (600).....	2.50
Expense of planting.....	6
Expense of maintaining, per hectare, till the crop.....	24
Contingencies.....	5
Total.....	49.50

In the space of six months (counting from the fourteenth month after planting) a hectare produces 600 bunches, which represents a value of 300 piasters. The first yield over, from 80 to 100 bunches a month may be gathered. The expense of clearing the field is about 24 piasters a year, and a plantation, well cared for, will last from six to eight years.

COMPARATIVE COST OF MANUFACTURING CHEVIOTS
COMPOSED OF SHODDY AND WOOL.

The use of shoddy in the manufacture of cheap "woolens" is not confined to our country alone. In England it creeps into its bedding of wool under the name of "mungo." The origin of the word, I am told, is this: When the article was first introduced the work people who were to spin it refused working it, saying, after being urged, "It won'er go;" upon which the manager answered, "It mun go," meaning "it must go." The people who work "mungo" gave me this explanation, and must, therefore, be satisfactory authority. After this instructive lesson no further difficulties seem to have been encountered, at least none are recorded.

In Germany shoddy is called *kunstwolle* (artwool), and this seems to be a very proper name, as there is far more art than wool visible when it is yet unmixed with the sprinkling of wool necessary to keep it from flying away in the spinning. I doubt, however, that the use of shoddy has anywhere made more rapid progress than in the United States. The census tables in the manufacture of woolens show—

	1870.	1880.
Number of pounds of domestic wool	154,000,000	177,000,000
Number of pounds of foreign wool.....	17,311,000	20,480,000
Number of pounds of woolen and worsted yarn	2,573,000	3,900,000
Pure wool	173,884,000	201,380,000
against		
Number of pounds of cotton yarn.....	3,263,000	3,517,000
Number of pounds of cotton warp	1,312,000	17,550,000
Number of pounds of cotton	17,571,000	24,744,000
Number of pounds of shoddy	19,372,000	16,582,000

The total quantity of raw materials consumed was 215,000,000 pounds in 1870 and 294,000,000 in 1880, a gain of 36.5 per cent. The consumption of real wool, however, had only increased 15.8 per cent., while mixed materials, cotton and shoddy, increased 124 per cent., and shoddy alone 142 per cent.

That our manufacturers are largely driven to the manufacture of mixed goods, where they would otherwise prefer the working of the pure article had they free wool, admits of no doubt. It is always easier to make a sightly article of genuine wool, etc., than of mixed materials, surrogates, etc. Under this heading of the free raw-material question everything applies to what I have said on the subject in my previous report on the manufacture of all-wool dress goods. Goods so largely produced in America certainly invite the question, "What is the cost of production in America and what in England?" I leave here the question of the cost of material out of consideration, as it would be too perplexing. The wools, the quality of shoddy, the proportions of shoddy to wool, all vary in different fabrics and in the same fabric made in different countries. In an article, 6-4 cheviot, manufactured in America, 35 per cent. of wool and 65 per cent. of shoddy is used in the warp and in the weft. In an English article of the same class, taken for comparison, I have two accounts. One gives a pure worsted warp and a mixed weft of one-eighth wool and seven-eighths of shoddy, and the other an even mixture of warp and weft of 40 per cent. Australian wool and 60 per cent of shoddy. I shall confine myself, therefore, only to a statement of the manufacturing cost.

THE AMERICAN GOODS.

The mill account is from the month of November, 1886; the mill was working mostly on this article in that month. It also produces the all-wool kerseys described in my report on that subject. The month's account shows a product of 31,718 yards, at the following cost:

	Total.	Finished yard. Cents.
1. * Pickering.....	\$377. 02	1. 19
2. Scouring and dyeing.....	406. 75	1. 28
3. Carding.....	585. 85	1. 85
4. Spinning.....	720. 56	2. 27
5. Warping.....	304. 36	. 96
6. Weaving.....	2, 736. 68	8. 62
7. Finishing.....	1, 116. 69	3. 36
8. Office expenses.....	891. 84	2. 81
9. Superintendence, etc.....		
10. Repairs, etc.....	380. 34	1. 20
	7, 520. 09	23. 54

The scouring and dyeing is done by the same set of men. The goods

materials is thereby correspondingly increased. The cost of dye-stuffs, scouring materials, coal, etc., is 7 cents per yard of goods. In the carding, 1 gallon of oil per 100 pounds carded is included at an expense of 0.40 cent per pound. The weaving wages contain the auxiliary expenses. The latter are day wages, and receive \$19 per day, or per month of (November) twenty-five working-days, \$475. On 31,738 yards this is per yard 1.5 cent, and leaves for direct weaving wages 7.12 cents per yard for all goods woven. The yard price for weaving these goods given me by the manufacturer is, however, only 7 cents. The 7.12 cents stand for the monthly average, and includes goods paid at a somewhat higher rate, which form a smaller proportion of the output, like the kerseys described below, and for which 8 cents is paid as the direct weaving price rate per yard.

The other items need no further explanation. They are accounted for in the kersey account and divide in the same ratio per yard. The only difference is in the expense of preparing the shoddy, which, of course, is not charged in the all-wool goods. Every other manipulation requires the same labor. If anything, rather more than less labor is required in the handling and manufacturing of shoddy goods than in all-wool goods.

THE ENGLISH COST.

The English goods taken for comparison are 40 per cent. wool and 60 per cent. shoddy, and of about the same count or number of picks per inch as the American goods.

The cost is:

	Cents.
1. For preparing the mungo from the rags per yard, labor, including expenses and scouring.....	2
2. For carding, including expense	3.6
3. For spinning.....	1.8
4. For warping, beaming, etc	2
5. For weaving.....	5
6. For scouring and milling.....	2
7. For dyeing ordinary colors, 3 <i>d.</i> ; indigo, 6 <i>d.</i> :	
$\frac{2}{3}$ ordinary colors, 2 <i>d.</i> ; $\frac{1}{3}$ indigo, 2 <i>d.</i>	8
8. For finishing	2
9. For incidental and general expense.....	.8
10. For coal, oil, etc.....	1.2
11. For rent, taxes, insurance	1.6
Total.....	30

Comparative cost-statement.

	America.			England.		
	Labor.	Incidentals and supplies.	Total.	Labor.	General expense, incidentals, and supplies.	Total.
	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>
1. Pickering and preparing wool.....	.25	.94	1.19	} 4	3.4	{ 2 3.6 1.8
2. Carding.....	1.45	.40	1.85			
3. Spinning.....	2.27	.....	2.27			
4. Warping, etc.....	.96	.....	.96	.75	1.25	2
5. Weaving.....	7	.....	7	4.4	.....	4.4
5. Additional	1.50	.....	1.50	.6	.....	.6
6. Finishing expense	3.36	.....	3.36	*2	2	4
7. Dyeing and scouring.....	1.28	7	8.28	†1	7	8
8. Office expenses, etc.....	.....	2.81	2.81	.....	.8	.8
9. Repairs, etc.....	.....	1.20	1.26	.....	1.6	1.6
Rent, taxes, insurance, coal, oil, etc.....	.....	.....	.....	.....	1.2	1.2
Total.....	18.07	12.35	30.42	12.75	17.25	30

* No. 6 and 8 of English account.

† Dyeing expense only. Scouring for English contained in No. 1.

The sum total of the manufacturing cost is about the same in both countries, but rent, taxes, and insurance would have to be added to the American cost. On the other hand the American office expense is given at a higher rate than the English, as the former contains the superintendent's salary at the rate of $1\frac{1}{2}$ cents per yard, which is not the case with the latter. The superintendent in this case was the principal owner and stockholder. This, however, is made up again in the middle column of the English account in collective charges for 1, 2, and 3. The American account in the middle column, No. 7, contains coal, etc., for the general mill supply other than what is used for dyeing alone.

The principal and perhaps only difference in labor comes in the weaving branch again, as in all the other accounts rendered higher where only one loom is handled by one weaver. But even here is only a difference of, say 3 cents, covering all labor balances, and of 2.6 cents for weaving taken by itself. The higher charge for finishing contains many items which ought properly to go into the middle column. The difference in the earnings of weavers is, however, much greater than the difference in the labor-cost per yard between the English and the American weaver. With an output of 80 yards in this class the earnings of an English weaver are 14s. 8d. per week, or \$3.52.

In the American mill during the month of November 63 weavers were employed on the output of 31,738 yards, or 482 yards each. Now allowing all were regularly in attendance for each and every one of the

for a week of fifty-six hours, which gives 86 yards for an equivalent of American time. If the English were paid at the American rate of pay they would at their lower output earn \$5.60 per week, while the American weavers earn \$8.12 per week on an average, taking them good, bad, and indifferent. This difference certainly is due only to the greater efficiency of American help and to no other cause. The output in the American cheviots is even somewhat higher, as the account contains a percentage of higher paid goods (see kersey report below) than 116 yards, and may be taken as 120 yards average. Some weavers have run as high as 176 yards a week.

A New England mill making a similar class of goods, the same weave though somewhat finer in the count, pays at the rate of \$1.25 for 20 yards, an average day's work, or $6\frac{1}{4}$ cents per yard.

The mill where the goods are manufactured, which I have here under review, is situated in a town farther south than New England, is not as advantageously situated as regards help and can not manufacture under the benefits naturally resulting from a congregation of all auxiliaries to manufacturing in an industrial center.

MANUFACTURING COST OF ALL-WOOL KERSEY CLOTH USED FOR ARMY CLOTHING.

This is a standard cloth, and is subjected to tests by examining officers. The weight is 22-oz. pure wool, indigo dye. The latest contract price was \$1.35 per yard, which leaves a margin for profit to the manufacturer.

A. — THE AMERICAN COST.

1. *The wool.*

The wool, so called 3-8 blood, is greasy wool and loses 50 per cent. in scouring. It costs in the grease 24 to 25 cents. The mill account takes it at the basis of 48 cents scoured. In manufacturing a further shrinkage is sustained, so that 28 ounces of scoured wool are required to produce 22 ounces of cloth. (Some return is made in the value of mill waste which I do not take into account.) The wool then stands $\frac{48 \cdot 28}{16} = 84$ cents. The scouring and dyeing is done by the same hands. The cost of scouring is, therefore, included in cost of dyeing, and will be stated below.

2 and 3. *Carding and spinning.*

The carding and spinning cost 4.12 cents per yard of cloth. In this the cost of what supplies may be required in the process is included. The carding costs 1.85 and the spinning 2.27 cents.

4. *Weaving.*

The warping costs 0.96 cents per yard and the weaving, inclusive of all additional labor expense in weaving, is 8.62 cents.

direct weavers' wages. For this cloth, however, 8 cents is the direct weavers' price per yard. The average output per weaver, good, bad, and indifferent, in this mill is 482 yards per month, or 111 yards per week. The average of wages earned per week by the weaver is a little above \$8, indicating for this cloth an output of about 100 yards per week. Some receive as high as \$48 per month and others below \$20 for the same period. The total cost of weaving from the yarn up, including warping, is, therefore, 10.46 cents.

5. Dyeing.

The labor-cost of dyeing and scouring is 1.25 cents. Ten men do the scouring of from 1,800 to 2,000 pounds of wool and the dyeing of about 1,200 yards of cloth a day. They are paid at the following rates:

One boss dyer, at \$4 a day.....	\$4. 00
Three men, at \$1.33 a day.....	4. 00
Four men, at \$1.25 a day.....	5. 00
Two men, at \$1.20 a day.....	2. 40
Total labor.....	15. 40

or 1.25 cents per yard.

The dye-stuff, etc., for indigo dye is given as 12 cents a yard, and the coal for this amount of work as 1 cent a yard (3 tons of coal, at \$4 a ton = \$12). Total cost of indigo dyeing, including scouring, 14.25 cents.

6. Finishing.

The finishing expense is 3.36 cents per yard, and covers all labor and incidental expense to bringing the goods into a merchantable state ready for shipment.

7. Additional expense.

The additional expense is 2.81 cents, which includes all office expenses, superintendence, etc. Of this amount $1\frac{1}{2}$ cents per yard is the compensation of the superintendent of the mill, and the balance covers sundry office expenses, clerk hire, etc. Repairs stand credited with 1.2 cents per yard, so that the total additional expense per yard amounts to 4 cents.

Total American cost.

	Cents.
1. Wool.....	84
2. and 3. Carding and spinning.....	4. 12
4. Weaving.....	10. 46
5. Dyeing and scouring.....	14. 25
6. Finishing.....	3. 36
7. Repairs.....	1. 2
Additional expense.....	2. 81
Total cost of 22-ounce all-wool kersey.....	120. 20

neither shrinkage from wear and tear of machinery nor the

B. — THE ENGLISH COST.

From a mill making the same class of cloth on contract for the British Government I have obtained the following data. The English price for the goods from the manufacturer is 3*s.* 8*d.* net, or 88 cents per yard. The items, as classified above in the American cost, stand as follows:

1. The wool.

The wool is Australian of variable shrinkage. The wool costs in the yard of cloth 2*s.* 2*d.*, or 52 cents.

2 and 3. Carding and spinning.

The carding stands charged on the mill-books with 2.77 pence, or 5.54 cents. The labor-cost in this is 0.961 pence, or 1.922 cents. The spinning costs 1.634 pence, or 3.268 cents, of which directly engaged spinning labor receives 0.654 pence, or 1.308 cents. Total for carding and spinning, 8.808 cents, of which labor stands charged with 3.130 cents.

4. Weaving.

The labor of warping and beaming per yard costs 0.2 pence, or 0.4 cent; the weaving, 1.923 pence, or 3.846 cents. The additional expense on this I could not obtain. It is contained in general charges and expense.

5. The dyeing.

The dyeing is done outside. The cost per yard (indigo dye) is 6 pence, or 12 cents; of this the labor-cost is 0.7 pence, or 1.4 cents. The scouring and preparatory work on wool are, of course, done in the mill, but as we have it included with the dyeing cost in the American cost account we have to introduce it here under this heading too. The cost, including materials, etc., is 0.432 pence, or 0.864 cent. The labor-cost in this is 0.173 pence, or 0.346 cent.

6. Finishing.

The finishing expense is calculated at 1 penny, or 2 cents, a yard.

7. Additional charges.

The additional expense is 1.926 pence, or 3.852 cents, a yard. The labor-cost of this is 1.2 pence, or 2.4 cents.

After this detailed statement of cost and analysis of cost items we can now proceed to classifying and comparing the American and English account:

COST OF ALL-WOOL KERSEY CLOTH.

Comparison of manufacturing cost of kersey cloth in America and England.

Elements of cost.	America.			England.		
	Labor.	Other expenses.	Total.	Labor.	Other expenses.	Total.
	Cents.	Cents.	Cents.	Cents.	Cents.	Cents.
1. Wool			84			52
2. Carding.....	1.85		1.85	1.922	3.618	5.54
3. Spinning.....	2.27		2.27	1.308	1.960	3.268
4. { Weaving	9.50		9.50	3.846		3.846
{ Warping.....	.96		.96	.4		.4
5. { Scouring.....	1.25	13	14.25	{ .346		.864
{ Dyeing.....				{ 1.4	10.6	12
6. Finishing	3.36		3.36	2		2
7. { Additional expense.....	2.81		2.81	{ 2.4	1.452	3.852
{ Repairs, etc		1.2	1.2			
Total.....	22	14.2	120.20	13.622	17.630	83.770

The English goods are coarser than the American goods, and would cost less to weave. I have two qualities of English goods of the same character and class. The second quality is finer than my American sample, which stands about half-way between the two English qualities. The finer English quality costs for warping and weaving 3.4 pence, or 6.8 cents, in labor. The quality of the American sample would cost here in labor between the 4.246 cents, which I have used in the comparison, as I have deemed it best to take the account just as received in the mill, and then give all benefits of a possible doubt to the American side. If anything, the English labor account in the comparison is therefore rather under than above the cost which would cover the identical goods. The same remarks would apply to the labor in spinning.

The weekly output per weaver in the English mill for the coarser quality is 75 yards. At the rate of 1.923 pence this gives 12s. 2d., or \$2.92 weekly wages. For the finer quality only about 50 yards is the output, equal at 3 pence or 6 cents to 12s. 6d., or \$3 weekly earnings. About 65 yards would be the weekly average in the quality of which in America fully 100 yards marks the average.

In the general expense of carding and spinning in the English goods interest on capital, insurance, taxes, gas, power, repairs, and renewals are charged. Some of these are absent in the American account as mentioned above. On the other hand many general expense items—overseeing, managing expense, superintendence—are contained in the general expense in Nos. 2 and 3 of the English account which in the American account are contained in the labor column. But waiving all the considerations and taking the respective columns as they stand, we have the American labor 22 cents against

England of 8.278 cents, as a total

differences in the method of calculating the general expense charges, etc., this plus cost of the labor column would be reduced to about 6 cents per yard, *i. e.*, the English cost that much increased.

The total manufacturing cost, exclusive of the wool, stands, as presented in these columns, for America 36.02 cents and for England 31.770 cents, a difference of only 4.25 cents, and if we allow $3\frac{1}{2}$ cents additional to bring the American allowances for general account up to the English calculation, then we should only have 31.770 English cost against 39.52 cents American. (In the American scouring and dyeing expense account, coal and supplies are contained for the English branches in Nos. 2 and 3 of expense charges.) While, however, in the total labor-cost, at the fullest allowance, there is only a difference of from 6 to 8 cents, in the cost of the wool a difference of 32 cents exists—52 cents in England against 84 cents in America. The cloth, according to the mill account, with the wool at the English price, would stand in America at 88.02 cents, which, under present wool duties, costs \$1.2020 to manufacture. —TUNSTALL, ENGLAND, *June 27, 1888.*

J. SCHOENHOF,
Consul.

PETROLEUM IN GERMANY.

After corn and cotton, petroleum is the most important product of the United States brought into the German Empire. It may be interesting to know what oils are imported, and in what quantities. There were 88,000 barrels docked at Mannheim in 1886 and 44,838 barrels in 1887. The causes of this great decrease were in the low water in the Rhine and the cheap freights by rail from Bremen—rates reduced on the Prussian railroads to help Bremen merchants. The royal direction of the Hanoverian railroads issued orders to reduce rates on goods from Bremerhaven and Geestemunde 12 cents per 100 kilograms over some roads, on others 28 to 29 cents on the ton. On one line it made a difference of \$9.50 on a load, on others \$6.75, and on others \$6.25.

Much as Germans may regret it, Holland holds the mouth of Germany's great river, the Rhine. Amsterdam, Antwerp, Mannheim, and in fact all the Rhine and adjacent river cities have received petroleum and many other articles of foreign import from Rotterdam. The new move, to give as much as possible of this business to Bremen, Hamburg, or other German cities is commendable, were it not so difficult and so contrary to what would seem just and natural. It seems hardly fair to introduce artificial methods in Bremen's favor when they are doomed to hurt every city on the Rhine and Main Rivers. Rotterdam, Amsterdam, and ~~Amsterdam~~

PETROLEUM IN GERMANY.

Imports of petroleum in barrels.

Ports.	1885.	1884.	1883.	1882.	1881.
	<i>Barrels.</i>	<i>Barrels.</i>	<i>Barrels.</i>	<i>Barrels.</i>	<i>Barrels.</i>
Bremen.....	645,305	724,965	987,798	1,162,935	99,864
Hamburg.....	1,006,760	1,076,930	887,518	959,952	653,787
Antwerp.....	830,132	992,020	830,350	805,837	962,587
Amsterdam.....	208,000	265,000	211,000	189,573	190,875
Rotterdam.....	333,102	226,515	194,736	292,690	193,234

Petroleum imported into Germany (in tons of 2,200 pounds): 1878, 417,319; 1879, 340,091; 1880, 266,655; 1881, 364,878; 1882, 342,174; 1883, 369,823; 1884, 462,544; 1885, 482,179; 1886, from June 1 to November 30, 371,338. In 1887 1,076 tests were made at Mannheim, no oil being found below test standard. The 1,076 tests resulted:

Grade Celsius.	No. of tests.	Per cent.	Grade Celsius.	No. of tests.	Per cent.
21.0°.....	1	.093	27.0°.....	13	1.202
21.5°.....	31	2.880	28.5°.....	1	.093
22.0°.....	222	20.632	29.0°.....	4	.372
22.5°.....	195	18.122	29.5°.....	4	.372
23.0°.....	98	9.108	30.0°.....	24	2.230
23.5°.....	55	5.111	30.5°.....	58	5.390
24.0°.....	27	2.510	31.0°.....	47	4.380
24.5°.....	68	6.320	31.5°.....	11	1.022
25.0°.....	53	4.925	32.5°.....	3	.278
25.5°.....	50	4.647	33.0°.....	2	.186
26.0°.....	53	4.925	33.5°.....	1	.093
26.5°.....	46	4.188	Under 40° (no flash).....	9	.836

Standard, Atlas, and Imperial flashed at the lowest points (between 21° and 22°), and they seldom showed a higher point. The oils that ranged between 27° and 33.5° were Russian, most of which ranged between 30° and 31.5°. The oils marketed as "Astral" showed no flash under 40°. There were 44,838 barrels imported here, as follows:

Brand.	Barrels.	Per cent.
Astral.....	124	.276
Atlas.....	512	1.140
Atlantic.....	2,228	4.970
Chester.....	728	1.623
Diamond.....	3,650	8.140
Empire Oil Works.....	2,090	4.661
Germania.....	6,070	13.538
Imperator.....	418	.932
Imperial.....	158	.330
	112	.249
	614	1.366

Most of these oils came via Antwerp and Rotterdam. In the matter of inflammability the Russian oil would be preferred, but in this alone is it better than the American. In point of light and cleanliness it is far inferior. Persons with whom I spoke doubted whether the Russian would ever be able to supplant even the present merits of the American.

During the year ending December 31, 1887, at the testing office of Dr. Bessinger, 49,050 barrels were submitted and 981 of them tested. Inflaming point at 76 minimum normal barometer stand with—

Grade Celsius.	No. of tests.	Per cent.	Grade Celsius.	No. of tests.	Per cent.
21.0°.....	1	0.102	24.5°.....	104	10.601
21.5°.....	25	2.548	25.0°.....	64	6.542
22.0°.....	123	12.538	25.5°.....	23	2.344
22.5°.....	202	20.591	26.0°.....	7	.713
23.0°.....	169	17.227	26.5°.....	6	.611
23.5°.....	126	12.844	27.0°.....	1	.102
24.0°.....	120	12.232	32.0°.....	10	1.019

This table gives the lowest inflaming point 21°, the highest 32° C.; 21° and 27° belong to American, 32° to Russian oils. Sixty-three and two-tenths per cent. of American oils have points of inflammation between 22° and 23.5°; 29.4 per cent. between the points 24° and 25°. The remainder, 7.4 per cent., is distributed over lower and higher grades.

During the previous year 72.5 fell between the points 22° and 23.5° C., and 12 per cent. between 24° and 25°. Figures for the year 1887 show a clear gain of 17 per cent. in this matter. This is explained by the fact that two very large consignments of standard gave inflammability at 24° and 25°. Such oils are very much desired by railroad and kindred corporations. It was noticed repeatedly that oil drawn in summer showed a higher inflaming point than the same brand when drawn in spring or winter.

Brands.	Number of barrels.	Per cent. off all.	Barrels testable.	Barrels tested.	Inflaming point at 76°.		Average.
					Minimum.	Maximum.	
Acme	450	0.917	450	9	21.5	23.5	22
Acme (extra standard).....	950	1.937	950	19	23.5	24.5	24
Atlas.....	500	1.019	500	10	24.0	26.5	25.25
Germania.....	8,800	17.940	8,800	176	22	27	24.5
Franklin.....	800	1.633	800	16	23	23.5	23.5
Point Bréze.....	50	0.102	50	1	24	24	24
Russian petroleum	500	1.019	500	10	32	32	32
Standard.....	37,000	75.433	37,000	740	21	25	23
Total.....	49,050	100.001	49,050	981	21	32	24.75

Although the average is 24.75°, it is because Russian has been added. The best average of American is only 20.71° C. In 1886 the general

experimented on with a view to determining combustion point and color. The inflammable point is reported for the entire quantity at 21° Celsius Abel, and the color prima white for 257,531 barrels, and standard white for the rest, 551,878. Bremen, because of advantages derived from importing in tank-ships, and reduction of freight rates along railroad lines to compete with water-ways, is in a fair way of obtaining the complete upper hand in this branch of trade. — MANNHEIM, *June 2, 1888.*

J. C. MONAGHAN,
Consul.

TRADE RELATIONS BETWEEN THE UNITED STATES AND GERMANY.

In commercial circles, and even beyond the same, more anxiety than ever manifests itself to improve the trade relations between the German Empire and the United States. This may be mainly attributable to the desire of extending the markets of this country, but receives additional and rather significant force from the circumstance that the commercial *entente cordiale* between the German Empire and other European nations becomes more strained every day. It is a well-known fact that considerations, not within my prerogative to explain, have caused discriminations against American products, annoying to our interests and unfavorable to a satisfactory intercourse between the two nations. The heavy exportations from Germany to the United States are chiefly manipulated by foreign interests, while little or nothing is done by us to secure for our manufactures and products that recognition here so much demanded by the mechanical and agricultural industries of the United States. I am daily in receipt of inquiries of all kinds for the disposal of American goods, particularly our specialties. I gladly give all information within my reach; but it would prove more effective if the suggestion, frequently made, to inaugurate a permanent exhibition of our manufactures at Berlin, or some other prominent city of Germany, received attention.

The peculiar condition of affairs on this side of the Atlantic, too often influenced by matters foreign to trade interests, appears to point at the present time more pressingly than ever to the necessity of inviting and encouraging the competition of the United States, and to make the German market more independent of the conditions, commercially as well as otherwise, to which it is now subjected. It is hardly necessary to refer to the present anomalous relations between Germany and Russia, from which latter country Germany

exporters receive great benefits from us, under our liberal invitation, it is doubtless advisable that by our action we should secure reciprocal advantages.

Permit me to quote from my last annual report:

In my opinion it would be highly advantageous for American manufacturers and importers to combine and open a permanent exhibition of American specialties at Berlin, no matter what the cost may be. Doubtless many trade connections could be established, since the flow of foreign visitors increases here every year and the political importance of the German capital attracts thousands of people.

Of course only the best of our industrial products should be exhibited. Prior, however, to any final step, the conditions and requirements of the German market should be carefully examined and considered by intelligent, experienced, and qualified men familiar with foreign languages and the wants and customs of this country.

BERLIN, *June 12, 1888.*

F. RAINE,
Consul-General.

RUSSIAN KEROSENE IN JAPAN.

The Russian consul at Nagasaki, in a dispatch dated April 23, 1888, calls the attention of the Russian merchants to the opportunity of developing a trade with Japan, and points out that a profitable business could be done by exporting Russian kerosene to that country.

He asserts that the Russian kerosene is both cheaper and better than the American, and ascribes it to the want of enterprise of Russian merchants that this important article has not been widely spread all through Japan. Whatever has been done, he says, has been done by foreigners, and 1,000 cases, containing two tins each of Russian kerosene, consigned to the bankers, Messrs. Holmes & Ringer, of Nagasaki, were sold in a few days.

The buyers were so well pleased with their purchase that they unanimously declared they would not buy American kerosene in future.

He maintains that although the kerosene had not been shipped direct, but had come from Hong-Kong, it was sold under the market price and still left a good profit to the merchants.

The consumption of kerosene in Japan in the year 1887 is said to have been —

	Cases.
Yokohama.....	77,151
Tokio.....	680,828
Suruga.....	} 367,998
Mikava.....	
Sagami.....	
Ovari.....	

making a total of 1,125,977 cases spread over but a limited district of the country. Moscow, *June 12, 1888.*

EXPORTATIONS OF TEXTILES BY THE LEADING MANUFACTURING NATIONS OF EUROPE.

The following summary shows the exports of the principal textiles from Austria, Belgium, England, France, and Germany in millions of francs (1 franc = 19.3 American cents) and in the percentage of each country of the total amount. The résumé originates from the Statistical Society of Paris, and varies with the statements below in so far as in the original the amounts of each of the past five years are given while here a five years' average is taken and the aggregate value of all textiles is stated :

From —	Cotton yarns.		Woolen yarns.		Linen yarns.	
	<i>Francs.</i>	<i>Per Ct.</i>	<i>Francs.</i>	<i>Per Ct.</i>	<i>Francs.</i>	<i>Per Ct.</i>
Austria.....	2,200,000	0.5	9,300,000	3.7	19,500,000	15.5
Belgium	5,700,000	1.3	53,900,000	21.8	64,900,000	51.6
England.....	391,500,000	90.1	107,700,000	43.7	31,400,000	24.9
France	2,500,000	0.6	35,100,000	14.3	5,600,000	4.5
Germany	33,100,000	7.6	40,600,000	16.5	4,400,000	3.5
Total.....	435,000,000	.....	246,600,000	.....	125,800,000	.....

From —	Cotton goods.		Woolen goods.		Linen goods.	
	<i>Francs.</i>	<i>Per Ct.</i>	<i>Francs.</i>	<i>Per Ct.</i>	<i>Francs.</i>	<i>Per Ct.</i>
Austria.....	18,000,000	0.8	57,100,000	4.3	14,100,000	5.9
Belgium	21,300,000	1.0	28,300,000	2.1	22,500,000	9.4
England.....	1,829,200,000	85.5	577,600,000	43.7	163,800,000	68.2
France	93,500,000	4.4	361,100,000	27.3	18,600,000	7.7
Germany	178,600,000	8.3	299,400,000	22.6	21,400,000	8.8
Total.....	2,140,600,000	.....	1,323,500,000	.....	240,400,000	.....

From —	Silk goods.		Aggregate of textiles.	
	<i>Francs.</i>	<i>Per Ct.</i>	<i>Francs.</i>	<i>Per Ct.</i>
Austria.....	8,000,000	1.5	128,200,000	2.5
Belgium	700,000	0.1	197,300,000	3.9
England.....	70,000,000	12.9	3,171,200,000	62.7
France	258,900,000	47.6	775,400,000	15.4
Germany	205,900,000	37.9	783,400,000	15.5
Total.....	543,500,000	.....	5,055,500,000	.....

It will be seen from these figures that England controls almost exclusively the market in cotton yarns. In the exports of woolen yarns, besides England, Belgium, France, and Germany also participate with considerable amounts.

> > > most prominent

England supplies the bulk of linen goods, while the other countries participate with comparatively small amounts. France exports most of silk goods; second to it comes Germany, while England is far behind. Of the total amount of all textiles England exports about three-fifths, Germany and France each one-sixth to one-seventh, and Austria and Belgium the remainder. — GERA, *April 14, 1888.*

CHARLES NEUER,
Consular Agent.

PROTECTION OF LIFE AND PROPERTY IN PERSIA.

[TRANSLATION OF FIRMAN OF HIS IMPERIAL MAJESTY THE SHAH. — TRANSMITTED BY MINISTER PRATT.]

Being, by the will of Almighty God, at the head of justice in my country, and by His will the lives and property of this people having been intrusted to my keeping, I have deemed it my duty, in praise of the God all-powerful, and in recognition of His munificence, to hinder those who would lay hands upon this trust to me confided, and to do all that lies within my power in order that my subjects may be secured in the enjoyment of life and property, so that tranquilly and in peace they may engage in all pursuits tending in the direction of civilization and acquirement of fortune.

This firman is proclaimed to the whole of Persia in order that all the people may know that the present edict accords to them the protection of life and property, with full liberty to dispose of what is theirs, and the right to acquire wealth, to form companies, to establish manufactures, to make roads, and indeed to do all things tending to promote civilization and their own and the public welfare.

To see these ends accomplished will cause me great personal satisfaction; also, I am ready to do you justice, and stand myself as guarantor for the security of your interests.

No one in Persia shall have the right to lay hands upon you, to confiscate what is yours, nor to punish you without recourse to the divine or common law of the land.

Dated 14 Ramazan, 1305 A. H.

(26 May, 1888 A. D.)

CAMMEROON TOBACCO.

This tobacco is the first production of the "Kamerunland und Plantagen Gesellschaft," Woermann, Thormäklen & Co., in the German colony of Kamerun (Cammeroon), Africa; it has just been received in the market here, and as a wrapper for cigars it is regarded as fully equal if not superior to the Dutch Sumatra tobacco.

It is expected that this Kamerun tobacco will develop immensely and seriously compete with Sumatra tobacco in the future, it being equally as good and much cheaper.

The price paid here for this Kamerun tobacco was 4 marks 10 pfennigs per kilogram = 50 cents per pound — Sumatra tobacco of similar grade costing from 88 to 95 cents per pound.

The tobacco merchants of Bremen are so well pleased with Kamerun tobacco that companies are being formed, and much capital is being invested in its cultivation. As the United States are large purchasers of Sumatra

TAXATION IN CUBA.

In discussing a speech of Mr. Montoro in the Spanish courts, the *Tarde* of Havana said on June 18, 1888:

"No civilized people pay more than 16 per cent. tax upon the total value of its productions; the island of Cuba pays 60 per cent. Spain itself, with a population of 16,000,000 inhabitants, has a budget of \$160,000,000. Cuba, with 1,500,000 inhabitants, has one of \$25,000,000. Let our readers answer if economic prosperity is possible in any country under such conditions.

"Those who live upon the budget and are not manufacturers or proprietors, and consequently do not suffer the consequences of an onerous taxation such as overwhelms us, attempt to demonstrate the reason of our present evils and attribute them to other causes, when in reality they are the same that bring the people to the pitch of exasperation in all countries. That is to say, economic decay is the cause of political troubles. It is proved that prosperity is the opponent of revolution."

Let us see how Mr. Montoro explains himself:

"In discussing this budget for Cuba the first questions to be asked are, does the condition of production in the island permit this burden of \$25,000,000? To answer this question with certainty there is no rule that is universally followed; but there are two that I shall adopt. One of them imposes taxes in proportion to the total production of all the sources of wealth; the other in proportion to the number of inhabitants. By this last rule, when applied to this budget, each inhabitant of Cuba pays the Government 85 pesetas (\$17), an exorbitant amount when it is known that the average of other countries is from 48 to 50 pesetas, or from \$9.60 to \$10 per inhabitant.

"By the other rule, that which determines the imposition of taxes in accordance with the total production, this budget shows that Cuba pays from 50 to 60 per cent. of her production. According to the most approved calculations the per capita tax in other countries on the same rule is 14 per cent. With such burdens how can you believe it possible for Cuba to maintain her wealth and prosperity. Cuba needs no protection; like all countries having a great staple production and with great competition to contend against, she desires to have her hands free that she may work freely. Cuba produces largely of tobacco against great competition, as also largely of sugar against the competition of the beet-root sugar of Europe, and, therefore, needs free trade in matters of industry like England."

Mr. Montoro does not believe that the establishment of direct taxation was in any way the cause of the Cuban insurrection. In answer to some objection raised by Mr. Martinez Longoria, Mr. Montoro replied that the insurrection should have been carried on under the flag of "Down with the taxes." He expressed a desire to suppress the duty on the exportation of tobacco—a prejudicial tax by the very manner in which it is established, because the inferior article pays the same tax as the best quality. He also advocated the suppression, or at least the reduction, of the excise duty in Cuba upon live cattle, as asked for by the people; for this tax, from its tendency and form under which it is established, is ruinous to the cattle trade. On the other hand he considers the tax on liquors as a productive one, but would exempt the common beverages. He censured the intention of the Government to differential duties, a thing impossible after the special convention with the United States. Mr. Montoro finished his speech with a pitiable picture of the island of Cuba, where a

Your committee are of opinion that the reasons urged against treating the post-office as a commercial business are not applicable in anything like the same degree to the telegraph department, and that the increasing annual deficit in the accounts of the latter can not be viewed otherwise than with grave concern.

Looking to the increasing costliness of the service as a whole, and to the constant pressure upon it of demands for increased and unprofitable expenditure, your committee deem it their duty to call attention to the fact that the department of the postmaster-general, in all its branches, is a vast government business, which is most likely to continue to be conducted satisfactorily, if it should also continue to be conducted with a view to a profit, as one of the revenue-yielding departments of the state. Excessive expenditure appears to your committee to be sooner or later inevitable in a great government business which is not administered with a view to an ultimate profit to the state.

Your committee are fully alive to the fact that in all its branches the general post-office can not from time to time escape the necessity of unremunerative outlay. But this consideration appears to them to constitute an additional reason for keeping in mind the necessity of working in the main upon business principles, and with a view to a profit on the transactions of each year. They are disposed to believe that the high business character of the post-office department is in no small degree due to the fact that it has been administered in this spirit and from this point of view; and they are satisfied that it will most certainly preserve that character by being permitted to be guided by the same principles in its future policy and action.—*Report of Select Committee on Revenue Departments Estimates (United Kingdom), July 11, 1888.*

MANCHESTER SHIP-CANAL.

The densely populated manufacturing district of which Manchester is the metropolis is on the eve of undergoing a great change, the importance of which it is impossible to estimate. The ship-canal, concerning the promotion of which the Department has been informed, is now in course of construction. In four years a population of more than 7,000,000 (one-fifth of the whole population of the United Kingdom) will have a nearer ocean steamer port than they now possess.

The important district which will be affected by the ship-canal embraces more than 150 industrial towns, 100 of which have a population exceeding 10,000, the population of 11 of these exceeding 100,000.

A cheaper means for the transportation of merchandise will be afforded to and from most of the manufacturing towns of Lancashire, Yorkshire, Cheshire, Derbyshire, and Staffordshire. Manchester will be the nearest port for the whole of the cotton trade, the Cheshire salt trade, the main portions of the Lancashire and South Yorkshire coal-fields, the Staffordshire pottery and iron trades, and a great portion of the important Lancashire chemical trade.

The ship-canal is to be constructed nearly twice the width of the Suez Canal, with 26 feet depth of water, and the sills of the entrance locks will be 11 feet below the deepest dock sills in Liverpool and in sufficiently deep water to be worked at all stages of the tide, so that vessels will be able to continue their voyage when once in the river Mersey.

will actually reach Manchester before she could dock at Liverpool. Assuming that the canal is only navigated at the rate of 5 miles an hour, the distance (35 miles) would be covered in less time than it now takes to carry goods from the Liverpool docks to Manchester.

The great trade of the Manchester district is, of course, in textiles, and it has been ascertained that about 1,500,000 tons of manufactured goods leave the district yearly, about two-thirds of the quantity going to foreign countries. But in speaking of Manchester as the metropolis of the cotton trade, it is often forgotten that the very magnitude of the staple trade involves the establishment of other great industries more or less dependent upon it. Thus we find that Salford, which is practically a part of Manchester, has the largest cattle market in the world, and Manchester the largest fruit and vegetable market. The Grocery Exchange of Manchester is unique. Here, every Tuesday, the grocers from the many towns which are so thickly studded within 20 or 30 miles of the city assemble to meet representatives from the wholesale houses, purchasing from samples their supplies of sugar, coffee, canned goods, tea, soap, dried fruits, and the hundred other commodities which constitute their stock-in-trade, and many of which are the products of the United States.

The cotton, provisions, corn, timber, and most of the other articles which form important items of the commerce of this great center are now stored at the outports, principally at Liverpool, and to no slight extent at Hull, Grimsby, Goole, Fleetwood, and West Hartlepool. It is obvious that the construction of the canal will cause great changes, and perhaps no more favorable opportunity has ever presented itself to American traders to increase their English trade and to get into more direct relations with merchants and consumers here. It is, indeed, quite probable that the canal will be as advantageous to our producers, if they act promptly, as it will be to the consumers here. Take, for instance, the immense cotton trade of the district, in which our Southern States have so great a stake—the spinner will come directly into contact with the shipper.

Direct importations of cotton have increased to a very large extent during the past few years, and it was shown during the parliamentary inquiry upon the ship-canal bill that at least one-third of the imports came through to spinners without the intervention of the Liverpool market. These purchases, however, are still made principally from merchants residing in Liverpool, or from representatives of American merchants there; but American houses will do well to see that they are speedily represented here in Manchester, where every spinner comes to sell his yarn and where many already purchase their cotton. A cotton market entirely separate from the general exchange (which

as great. There is a considerable grain market here, and the merchants meet once a week, but at present there is very little direct import trade done at the Grain Exchange, the cargoes being purchased from Liverpool, London, and Hull merchants who are represented here.

TRAFFIC IN AMERICAN PRODUCTS AS PROVED BEFORE THE PARLIAMENTARY COMMITTEE.

Before an act could be obtained for the construction of the ship-canal it was, amongst other things, necessary to prove that the traffic was sufficient to justify the construction of so great a work; and it may be of interest to merchants if I name some of the figures established in spite of the most able opposition, for the scheme was opposed by all the railway companies and by the enormous influence brought to bear by Liverpool. The articles I name are selected by me as being articles in which trade exists with America, and I give for comparison the total import of the same traffic into the United Kingdom for the year 1883, that being the year given for comparison in Parliament, the quantity proved as likely to use the ship-canal, the export from the United States to all countries in 1887, and the export from the United States to the United Kingdom for 1887.

Articles.	Imports into the United Kingdom, 1883.	Quantity proved as likely to use the ship-canal.	Exports from United States to United Kingdom in 1887.	Total exports from the United States in 1887.
	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>
Bacon and hams.....	184,799	126,772	20,321	209,961
Other meat and fish.....	225,169		.....	.....
Butter and butterine.....	116,723		2,076	6,265
Cheese.....	89,985		36,315	40,627
Cereals and their products, including cattle-feeding grain..	7,942,367	949,100	*60,014,589	*142,279,201
Oil-cake.....	256,683	20,946	249,555	311,147
Tobacco.....	26,605	.....	† 36,543	† 146,833
Cotton, waste, and yarn	782,186	601,408	676,689	1,084,728
Dye-woods, dye-stuffs, tanning materials, and drugs	307,609	25,413	.....	.....
Gum and resin.....	88,079	6,611	‡ 468,816	‡ 1,365,012
Hides, skins, and leather.....	93,198	9,090	§ 11,360	§ 15,265
Manures and phosphates.....	499,173	20,642	172,456	220,792
Metals.....	599,858	.....	.....	.....
Minerals	4,516,009	194,753	.....	.....
Petroleum.....	302,258	31,971	|| 71,627,212	|| 480,845,811
Other oils	163,380	22,836	|| 283,094	|| 4,186,978
Seeds and nuts for extracting oil	1,017,219	32,675	¶ 5,573	¶ 5,612
Tallow.....	51,913	9,476	16,978	31,639
Timber.....	6,734,765	285,013	§1,389,086	§2,674,665

* Bushels; includes wheat and corn only.

† Leaf only.

‡ Resin only.

§ Sole leather only.

|| Gallons; cotton-seed and linseed oil only.

¶ Cotton seed only.

was formed, and after a prolonged inquiry they issued a report, paragraphs from which I quote, as follows:

We have undertaken this inquiry under a strong sense of public duty, and with the sole desire and aim of arriving at a correct judgment upon the merits of a scheme the failure of which, supposing it to be commercially sound, would manifestly be a public calamity. Our committee is composed of business men, representing various interests, who pretend to no authority beyond such as they may derive from their personal knowledge of the trade and commerce of the district, and who have endeavored honestly and impartially to judge of the practicability and commercial prospects of the scheme. We believe we are correct in stating that not one of the members forming the committee entered upon the inquiry with his mind made up, and we are sure that many of them did so with opinions adverse rather than favorable to the commercial prospects of the scheme. We have examined it with all care and with the constant endeavor to discover its weak points, and with this object we have made it our business to ascertain and inquire into the objections brought against the scheme. If, in the result, we have been led with unanimity to conclusions far more favorable to the project than we could have anticipated, it is, we believe, only because a similarly-exhausted inquiry would produce the same effect upon the minds of others who might undertake it. In presenting our conclusions we have, at the same time, summarized some of the grounds upon which they are based. It is no part of our object to absolve the public, by whose support alone the scheme can be carried out, from the duty of personal investigation. We merely desire to record our own conclusions, after a most careful inquiry extending over about five weeks and carried on almost from day to day in sittings usually of many hours.

Our conclusions are: That the ship-canal and works are practicable from an engineering point of view, and would permit vessels of the largest class to be safely navigated to and from Manchester; that the capital powers of the company under their acts of Parliament, amounting to £9,812,000, are sufficient for all the purposes contemplated by their acts; that the estimate of £104,200 per annum for the expenses of the working and maintenance is ample — there would probably be a material saving on this item during the first few years after completion; that the project is a thoroughly sound commercial undertaking, and would speedily become remunerative on the completion of the works; that a large amount of traffic would be at once secured, and that thereafter the increase in traffic and revenue must be steady and continuous.

The total charges at present paid for bringing some of the principal articles from a vessel in the Liverpool docks to the railway station or Bridgewater Canal wharf at Manchester are now (although the railway and canal rates have lately been reduced) as follows:

	Per ton.	
	s.	d.
Cotton	13	8
Wool	16	5
Sugar (loaves)	17	11
Sugar (unrefined)	12	2
Bacon and hams	15	0
Tea	18	2
Wheat in sacks	9	11
Fruit (oranges)	15	0
Petroleum	14	5
	13	6
	£	11

the owner of the cargo, and would, after providing remunerative rates for the canal company, leave a saving for the owner of the cargo of at least 50 per cent. of the existing charges. There would be similar savings on outward-bound cargo.

The importance of such savings in these days of fierce competition and narrow margins to the trades of the district, the very existence of many of which, now that the rate of carriage bears so disproportionate a relation to the cost of most commodities, depends on cheap carriage, can not be overrated.

Our estimate of traffic and revenue is not based on any of the statements in the prospectus. After investigating these statements very fully we have arrived at our conclusions on an independent basis. Including local, coastwise, and heavy traffic, some of which will, we believe, be at once obtained, and also including considerable quantities of traffic which would be new to the district, we are of opinion that during the second year after the canal and docks are open for traffic there is a reasonable prospect of securing along the whole length of 35 miles of canal 4,428,532 tons, yielding a gross income of £794,173. We deduct 25 per cent. for contingencies, say £198,543, leaving £595,630. We add the Bridgewater Canal net revenue, £60,000, making the revenue £655,630, from which we deduct interest on £1,800,000 debentures, £72,000, working expenses (which we consider to be overestimated) £104,200, making £176,200, and we thus arrive at a net revenue for the second year of £479,430. This sum, which we consider a safe estimate, would be sufficient to pay a 5 per cent. dividend upon the whole share capital of the company (£8,000,000) and to leave a surplus of £79,430. Our estimate of traffic and revenue for subsequent years is much larger, and points to the undertaking becoming increasingly remunerative under capable administration.

In accordance with the recommendation of the committee, from whose report I have just quoted, the necessary capital was subscribed for and the construction of the canal is now rapidly proceeding.

The chairman of the Manchester Ship-Canal Company is Lord Egerton, of Tatton, and the deputy chairman Sir Joseph C. Lee, so well known as the chairman of the successful Manchester exhibition of the past year (1887), and I am authorized by them to state that the company will gladly assist traders anxious to extend their trade with any necessary information and assistance.

The construction of this new water-way is likely to so materially affect the interests of a large body of American producers and merchants that it seems of far too much importance to be dismissed by me in this general report. The character of the works will also prove interesting to American engineers in view of similar developments at home, and I therefore propose to send from time to time separate reports dealing with matters especially affected by the influence of this great enterprise.

THE MANCHESTER DISTRICT.

My impressions of the importance of this city on commencing my consulship in Manchester have been considerably changed by the opportunities for observation which have since presented themselves. I find that Manchester, as a factor in the English commonwealth, is of much greater

ENGLAND AND WALES.

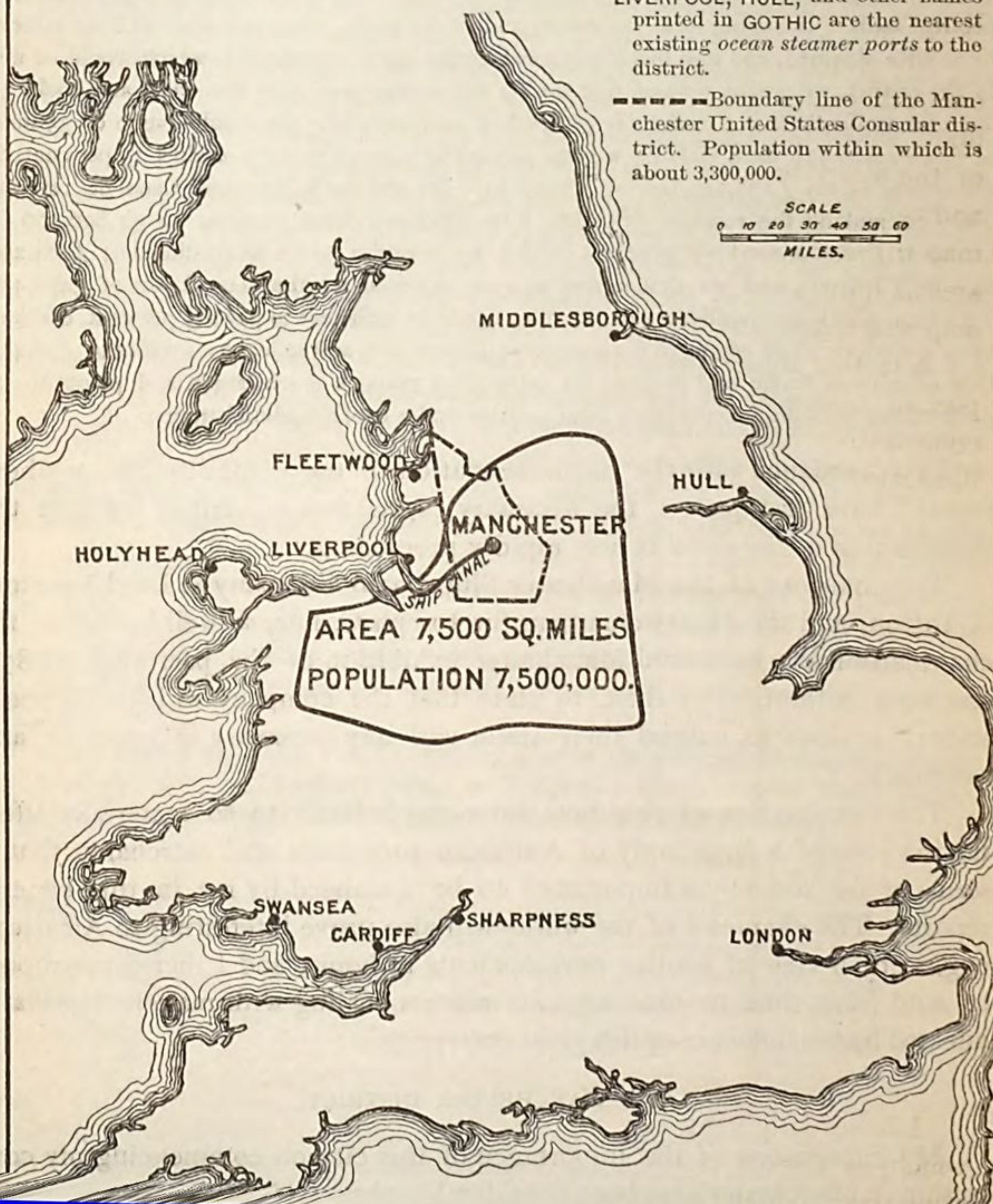
EXPLANATION.

———— Boundary of district nearer to the Manchester Ship Canal than to any other *ocean steamer* port.

LIVERPOOL, HULL, and other names printed in **GOTHIC** are the nearest existing *ocean steamer* ports to the district.

----- Boundary line of the Manchester United States Consular district. Population within which is about 3,300,000.

SCALE
0 10 20 30 40 50 60
MILES.



gether misunderstood. As a matter of fact Manchester ranks next in precedence to London, and far excels the other cities in the magnitude of its interests.

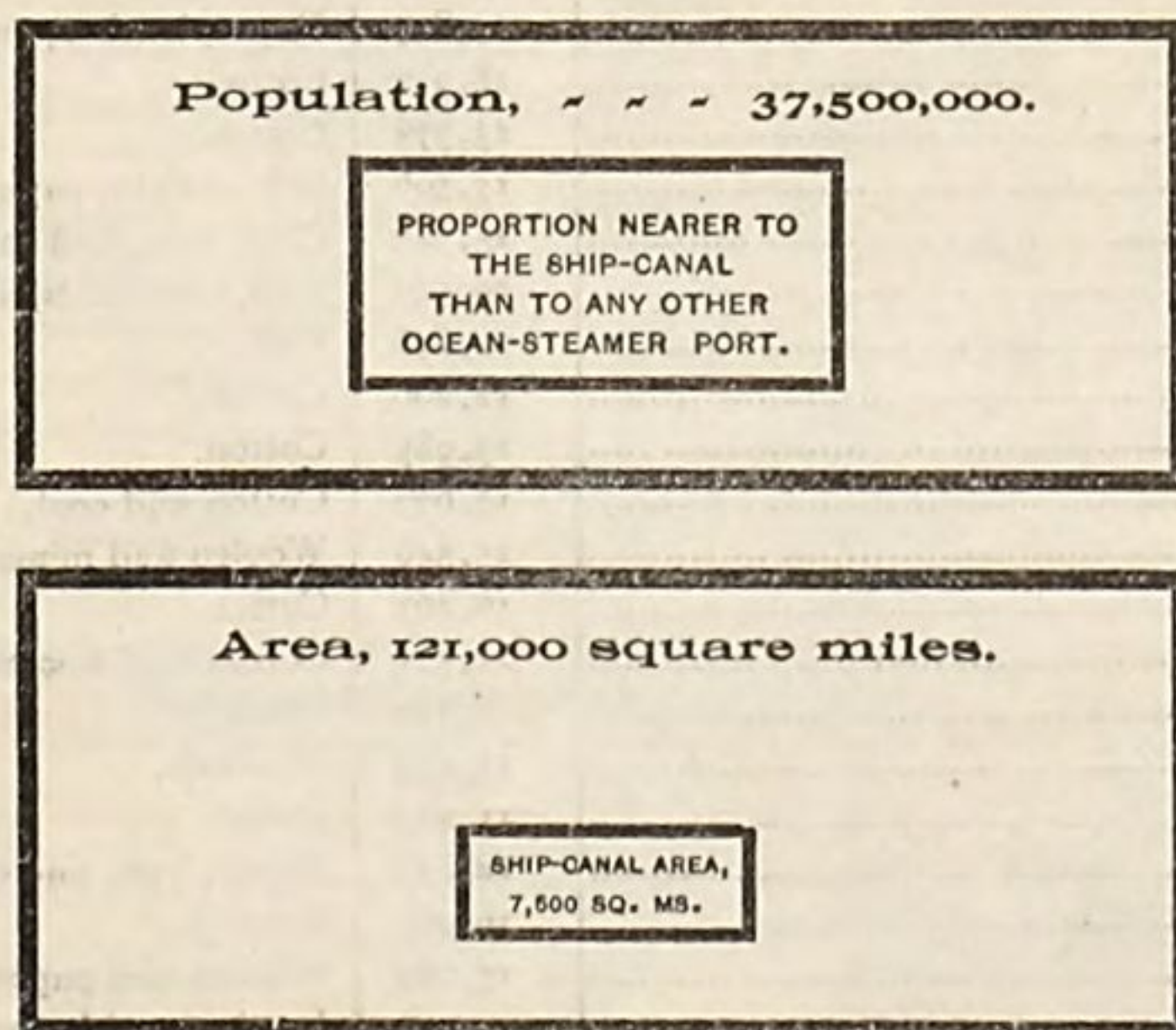
In my general report upon the Manchester Ship-Canal undertaking I stated that more than 150 industrial towns would be affected by that great enterprise. Exhibit No. 1 is a map upon which the area is indicated with which these industrial towns are comprised, the boundary of which area includes 7,500 square miles. This is equal to one-sixteenth of the entire area of the United Kingdom.

The population inhabiting this area is quite 7,500,000, representing about one-fifth of the total population of the United Kingdom. The principle upon which the boundary line of this area has been fixed is the illustration of the mean distance between the nearest ocean-steamer ports now existing and the ship-canal which is now in course of construction. A glance at this map will show that the most remote point from the canal in any part of the area is quite as near to the ship-canal as to any of the ports named on the map which are the existing ocean-steamer ports.

A further important feature is the fact that the majority of the most important places are almost immediately proximate to the canal; and the comparative importance of this ship-canal district is still further forcibly illustrated by the annexed diagram :

[Exhibit No. 2.]

UNITED KINGDOM.



I have delineated upon the map the boundary of my consular district, which, as already stated in a former report upon emigration, embraces a population of about 3,300,000.

Within the ship-canal area there are 151 industrial towns. One hundred of these towns have each a population exceeding

The following memorandum contains a list of the industrial towns referred to, giving the population according to the census enumeration for 1881. The memorandum also describes the individual industries which specially characterize the various towns named:

Towns with populations between 10,000 and 20,000.

Towns.	Popula- tion.	Characteristic industries.
*Atherton	12,602	Cotton, iron, and coal.
*Bradford (Lanc.).....	16,113	Cotton and coal.
*Bollington	10,424	Agriculture.
Bridgeworth.....	15,270	Carpeting.
Cannock.....	17,127	Coal.
Chesterfield.....	12,221	Lace and minerals.
*Clitheroe	10,177	Cotton.
Congleton	11,116	Silk and cotton.
*Colne.....	11,970	Cotton and minerals.
Chapel-en-le-Frith	10,383	Cotton, paper, and minerals.
*Chorley (Lanc.).....	19,472	Cotton.
*Dukinfield.....	16,493	Cotton, machinery, and coal.
*Glossop.....	19,574	Cotton, woolen, and paper.
*Halliwell	14,012	Cotton.
*Haslingden	14,333	Cotton, woolen, and minerals.
*Hindley	14,667	Cotton and coal.
Ilkeston	14,119	Hosiery, lace, and iron.
Kirkstall	19,136	Woolen.
Leek	12,865	Pottery.
*Littleborough	10,405	Cotton.
Lockwood	14,742	Woolen and machinery.
Loughborough.....	14,733	Hosiery.
Market Drayton	14,849	Paper, leather, and malt.
*Middleton	18,952	Cotton.
*Mossley	13,372	Cotton.
Newcastle	17,506	Silk, cotton, paper, and coal.
Newport (Shpr.).....	15,346	Coal, iron, and malt.
*Newton	10,580	Iron, chemicals, and glass.
*Northwich.....	12,246	Salt.
*Oswaldtwistle.....	12,206	Cotton.
*Padiham	13,985	Cotton.
*Pemberton.....	13,673	Cotton and coal.
Pudsey.....	15,549	Woolen and minerals.
*Radcliffe	16,263	Cotton.
*Rawtenstall.....	12,571	Cotton and woolen.
*Rossendale	16,120	Cotton.
Runcorn.....	15,133	Minerals.
*Royton.....	11,433	Cotton.
Shiffnal.....	12,821	Paper, iron, and coal.
Stoke	19,263	Pottery.
Shipley.....	15,089	Woolen and paper.
Stafford	19,901	Leather and brewing.
Sowerby.....	16,844	Worsted and machinery.
Tamworth.....	14,098	Small wares and paper.
Tunstall.....	14,244	Pottery and minerals.
	14,098	Malt, cheese, and wool.

Towns with populations between 20,000 and 50,000.

Towns.	Popula- tion.	Characteristic industries.
*Accrington.....	31,435	Cotton.
*Altrincham	32,609	Agricultural.
*Ashton	43,389	Cotton, machinery, and coal.
*Bacup.....	25,033	Cotton and machinery.
Barnsley	29,789	Linen, machinery, and coal.
Batley.....	27,514	Woolens.
Bingley.....	20,703	Worsted and machinery.
Bilston	22,730	Ironmongery and coal.
Burslem	26,521	Pottery.
Burton	39,285	Brewing.
Cheadle	22,724	Small wares, machinery, and coal.
Chester.....	40,342	Lead, iron, and cheese.
Crewe.....	24,732	Locomotives and railway plant.
Dewsbury	29,617	Woolens.
Dudley.....	46,223	Iron, coal, and glass.
*Farnworth.....	20,701	Cotton.
*Heywood.....	23,050	Cotton and machinery.
*Hyde.....	28,629	Cotton and machinery.
Keighley	25,245	Worsted and machinery.
*Newton Heath.....	29,188	Cotton.
*Over Darwen.....	29,747	Cotton.
Rotherham.....	34,782	Machinery and chemicals.
*Saddleworth.....	22,300	Cotton, woolen, and minerals.
Shrewsbury.....	26,478	Flannels and linen.
*Stalybridge	39,671	Cotton.
Wakefield	30,573	Wool, machinery, and corn.
*Warrington.....	45,257	Wire, soap, chemicals, and machinery.
Wednesbury.....	24,564	Railway plant, coal, and iron.
*Wigan	48,196	Cotton, machinery, and coal.

Towns with populations between 50,000 and 100,000.

*Bury	51,582	Cotton, woolen, and machinery.
Bramley.....	54,931	Woolen and minerals.
Halifax.....	73,633	Woolen, cotton, and machinery.
Huddersfield.....	87,146	Woolen, fancy goods, and machinery.
*Rochdale.....	68,865	Cotton, woolen, and machinery.
*Stockport.....	59,544	Cotton and hats.
West Bromwich.....	56,299	Coal and iron.
Walsall.....	58,808	Ironmongery, coal, and machinery.

Towns with populations exceeding 100,000.

*Manchester and Salford	782,630	Cotton, machinery, locomotives, railway plant, steam-boilers, silk, linen, carpets, chemicals, paper, glass, grain, sugar, provisions, fish, cattle, hides and skins, vegetables, and fruit.
*Bolton.....	105,973	Cotton, bleaching, and machinery.
*Blackburn	100,618	Cotton and machinery.
Bradford	180,459	Worsted, machinery, and dyeing.
Leeds	309,126	Woolen, linen, machinery, chemicals, pottery, and coal.
Leicester	122,351	Hosiery, shoes, machinery, and elastic webbing.

The population figures given in the foregoing memorandum should be increased by about 14 per cent. in order to obtain the present population.

With regard to the potential future of the Manchester district, it should be borne in mind that the population of Lancashire doubles about every thirty years.

The exhibit (No. 3) shows the general distribution of population around Manchester and the proximity of a much greater proportion of this extensive population to Manchester than to any other port. The triangle traced on the map formed by Stockport, Preston, and Leeds contains a greater manufacturing population than any one of equal size in the world.

As to density of population: In Belgium and Holland, usually considered to be the most densely populated countries in Europe, the average in 1884 was 416 persons to the square mile. The average density of the population of the United Kingdom is, in 1888, about 310 per square mile. Deducting the population and area within the triangle, the average density per square mile of the rest of the United Kingdom is 280 inhabitants. The density of the population within the triangle is 8,414 per square mile. Therefore the density of this population is thirteen times as great as the density per square mile in Belgium and Holland and nineteen times as great as that in the rest of the area of the United Kingdom.

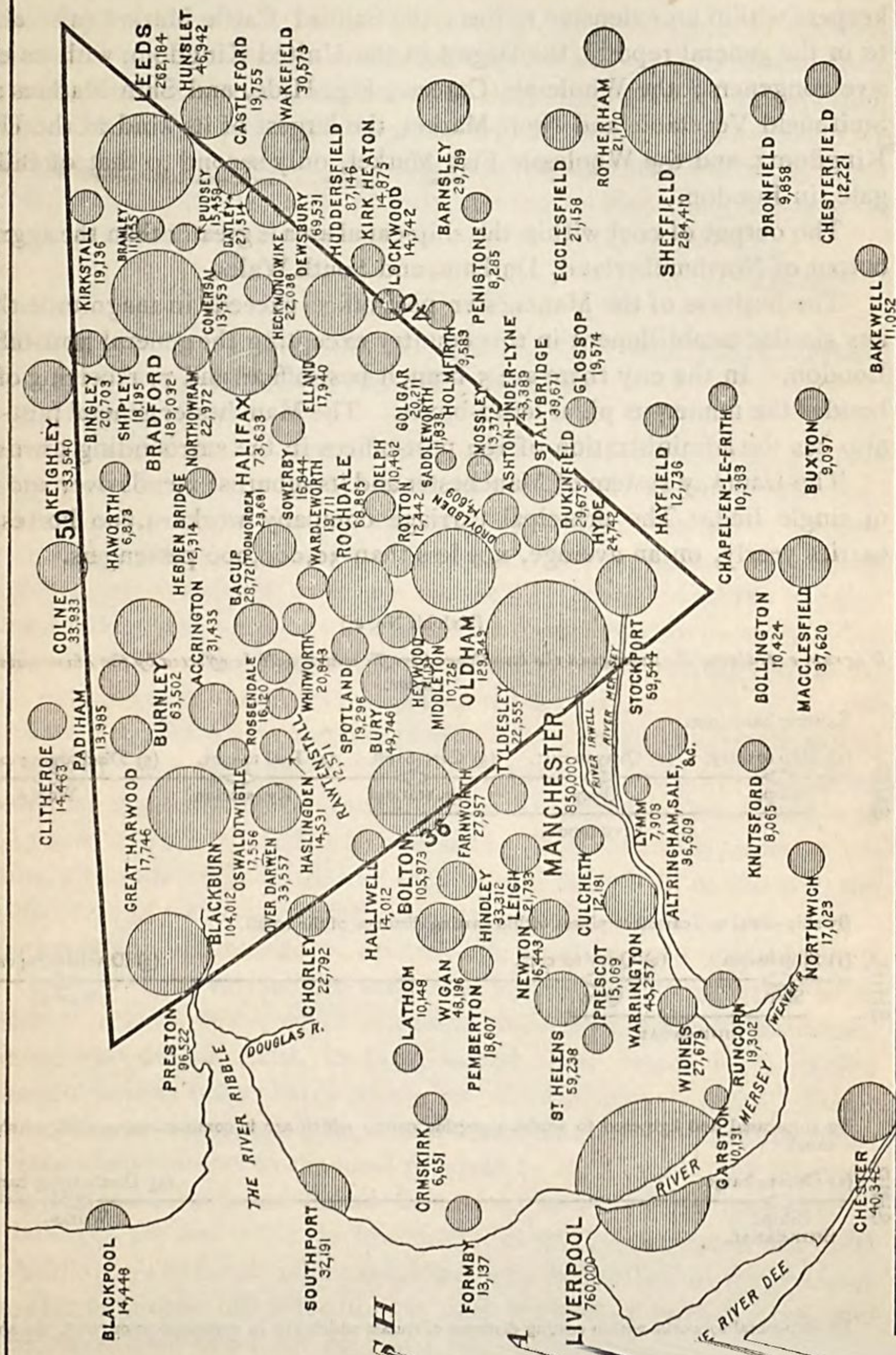
The area of the triangle in Exhibit No. 3 is only 713 square miles, whilst the ship-canal area, in Exhibit No. 1, is about 7,500 square miles. In a small radius the population is greater around London than around Manchester, but taking an extended radius of 45 miles the population exceeds that of London by 500,000.

Again, taking another city, the neighboring port of Liverpool, whose greatness and just fame are so well known to Americans as to supply probably the very best standard by which to measure for them the real importance of Manchester, we find that within a radius of 12 miles from the Royal Exchange of Manchester there is a population of about 2,000,000, whereas a similar circle described about its neighbor would contain but about 1,000,000 people.

After the cotton-manufacturing trades, the great bulk of which are located in the Manchester district, come next in importance the mechanical industries of the district. The range and extent of these are unparalleled in the world, embracing the manufacture of locomotives, steam-boilers, and railway plant of every description; of textile machinery applicable to the cotton, woolen, silk, linen, and jute manufactures, and, in fact, of every variety of machinery.

The character of Manchester is forcibly exemplified by its

ROUGH PLAN, SHOWING DISTRIBUTION OF POPULATION AROUND MANCHESTER.



in various parts of the United Kingdom, and coming from 177 different towns, Liverpool being represented by 267 subscribers. Then there is the Grocery Exchange (alluded to in my general report), with an average attendance every Tuesday of 2,000 of the representatives of the grocery-store keepers within an extensive radius; the Salford Cattle Market (also alluded to in the general report), the largest in the United Kingdom, with its extensive congeners; the Wholesale Carcass, Pig, Hide, and Skin Markets; the Smithfield Vegetable and Fruit Market, the largest of its kind in the United Kingdom; and the Wholesale Fish Market, only second to that of Billingsgate, in London.

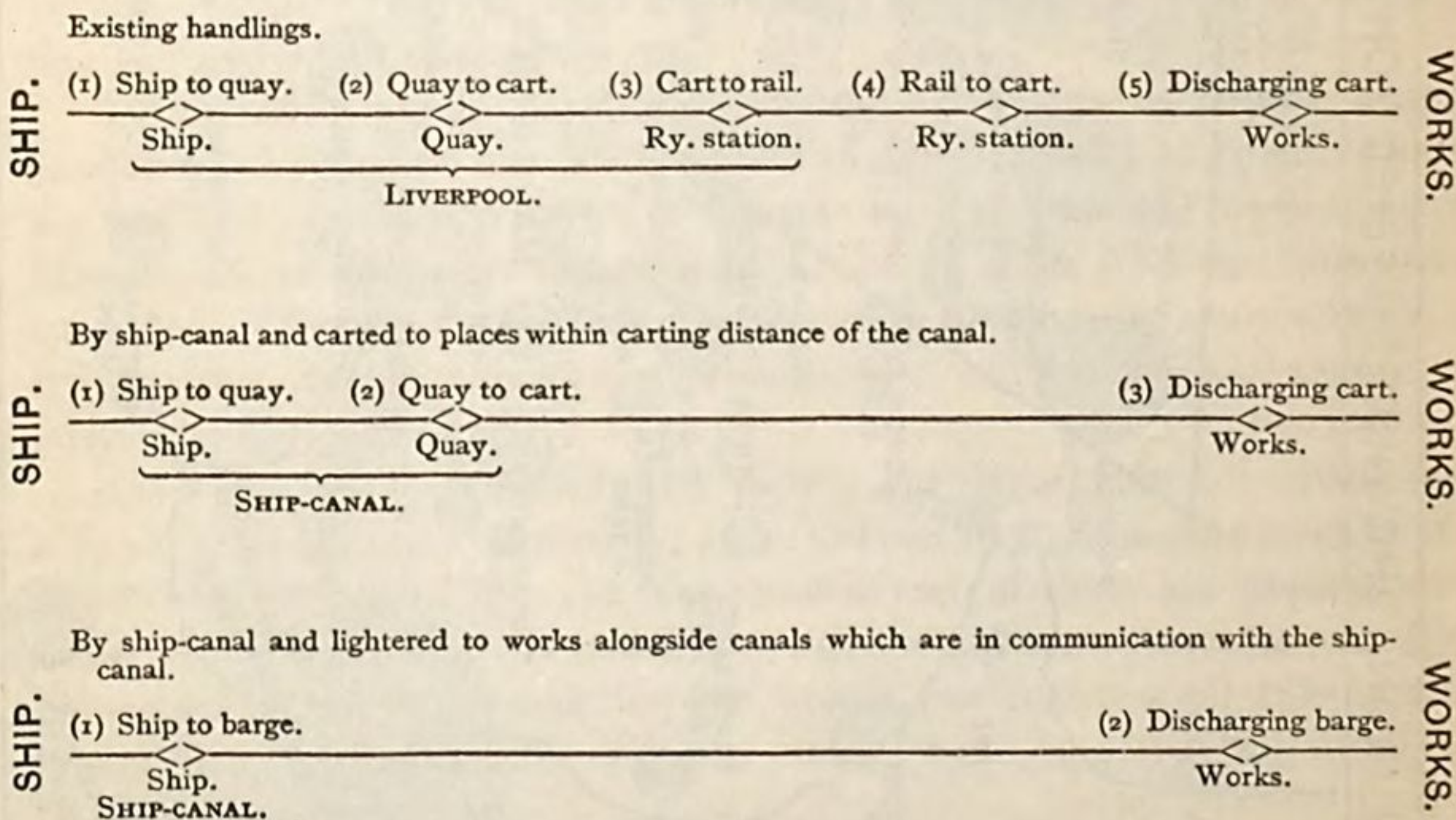
The output of coal within the ship-canal area is greater than the aggregate output of Northumberland, Durham, and South Wales.

The business of the Manchester post-office exceeds in magnitude that of any similar establishment in this country excepting the general post-office in London. In the city there are 5 branch post-offices and 77 receiving offices, besides the numerous pillar letter-boxes. The Manchester general post-office also has the administration of 102 post-offices in the surrounding towns.

The tramway system of Manchester and its suburbs extends over 130 miles of single line. The principal carriage company works 4,500 horses, and carries yearly, on an average, not less than 30,000,000 passengers.

[Exhibit No. 4.]

Diagram explaining the savings in the handling of traffic which will be effected by the Manchester Ship-Canal.



Although at present without direct access to the sea, Manchester is a customs port. It is ninth in the list of 135 ports in the amount of duties collected, and ranks immediately after the port of Hull and before Southampton, Plymouth, Dover, Sunderland, Grimsby, Cardiff, Swansea, Greenock, Dundee, Middlesborough, and other well-known ports.

And, finally, Manchester is the focus of a complete system of railways and canals, so that the changes which must follow from the constitution of a considerable shipping port in the center of a district possessing already such facilities of transportation and locomotion will be seen to be enormous, if we consider the saving in the cost of carriage and transhipment and in the handling charges upon the vast traffic already existing. — MANCHESTER, *June 1*, 1888.

E. J. HALE,

Consul.

ACCIDENT AND SICK INSURANCE OF AGRICULTURAL LABORERS IN SAXONY.

As a supplement to the report which I presented some time ago on the sick insurance law of Germany*, I beg now to offer the following sketch of the recent legislation in Saxony to extend the benefits of the law to laborers engaged in agriculture and forestry. These laborers, with some other classes of employés, were excluded from the compulsory operation of the imperial sick and accident insurance laws, but might be brought within its scope either by the local option of a community or by means of internal legislation on the part of any one of the states composing the Empire.

In Saxony, where about 300,000 persons are engaged in agriculture and forestry, small advantage has hitherto been taken of local option, owing apparently to the difficulty of distinguishing between the farm hands who are and those who are not liable to insurance. The Saxon Government has accordingly introduced a legislative scheme for the whole of Saxony, the chief provisions of which are as follows:

As regards sick insurance, the existing organization is so utilized that it is now compulsory on agricultural and forest laborers to belong either to an *orts kasse* or *betriebs kasse*, which represent the higher grade of insurance, or, where these do not exist, to the *gemeinde kasse*, which for a smaller contribution confers somewhat smaller, but still sufficient, benefits. Funds of lower grade, in which agricultural and forest laborers are enrolled, must either revise their statutes to the level required by the law for such laborers, or the latter must leave and enroll themselves in a fund of higher grade. Casual laborers are not liable to insurance unless the statutes of the local fund require it. The family of the employer may be enrolled in the *gemeinde kasse*. The employer himself can join only the *orts* or *betriebs kasse*, and that only when such cases are provided for in the statutes.

As regards accident insurance, the whole of Saxony has, for the purpose of insuring agricultural and forest laborers, been formed into a single *genossenschaft* or guild, with its seat and office in Dresden. Persons liable to accident insurance are first, all employes whose wages or salary does not exceed 2,000 marks (\$476) per annum, and, secondly, the employer, his wife, and family. The former are assessed on their individual earnings, the latter on three-hundred fold average daily wages of the ordinary day laborer. By local statute compulsory insurance may also be extended to employes whose wages exceed 2,000 marks per annum. The local statutes may also settle the conditions on which persons not legally liable may effect insurance in the guild. For the first thirteen weeks after an accident the burden of insurance falls on the sick fund. At the end of that period, or earlier in case of death, the accident fund has to bear the compensation.

The executive functions of the guild are placed in the hands of a guild committee (*genossenschaftsvorstand*), who are assisted by confidential officers (*vertrauens maenner*), whose duty it is to supply the committee with information required from their localities. The annual accounts are to be audited and passed by the agricultural council for the Kingdom of Saxony. The law also contains a number of regulations for the conduct of the business of the guild which are only of local interest. It is, however, expressly enacted that no employer may contract himself out of his obligations under this act. Any such contracts with his servants or laborers are null and void.

With this act another important step has been taken toward the extension of the insurance acts to all classes of persons in the employment of others, and I may add, in conclusion, that the city council of Leipsic has also extended compulsory sick insurance to clerks and similar assistants in places of business within its district. — LEIPSIC, June 14, 1888.

SAMUEL ROLFE MILLAR.

Consul.

RUSSIAN KEROSENE IN CEYLON.

RUSSIAN OIL BECOMING MORE POPULAR LOCALLY.

At present the stores are filled with Russian oil (ex *Castle Eden*), which seems to be rapidly coming into favor. Up till quite recently almost the whole of the oil consumed in the island was American oil brought down in sailing vessels, but trial shipments of Batoum oil have been made in steamers, and the best results obtained. To begin with, the voyage by steamer from the Black Sea is necessarily very much shorter than that by sailing vessel from New York, the former occupying perhaps a month, the latter often as much as five months, and involving of necessity a very much larger percentage of leakage. Petroleum from New York by sailer seldom turned out less than $1\frac{1}{2}$ per cent. leakage, whilst Russian shipments hitherto have averaged about $\frac{1}{2}$ per cent., which makes a very considerable difference to importers. The Russian oil also seems to be of better quality than the American, and, although not packed quite so neatly, this defect will no doubt soon be remedied. The Batoum oil, too, is as clear and clean as the purest water, and is said to be a superior article. If that be so, friends will have to pull themselves together, or be content to see their oil trade entirely from them. In 1887

THE GOVERNMENT STOPS THE DISTRIBUTION—ALLEGED DANGEROUS NATURE OF THE OIL.

The *Castle Eden* arrived from Batoum with 70,000 cases of Russian kerosene oil on the 11th instant, consigned to Messrs. Volkart Brothers. This was the second shipment of petroleum landed since the new petroleum ordinance came into operation. A permit to land the oil was obtained from the Government as soon as the steamer arrived and the work commenced, about 5,000 cases being landed and stored in the Petroleum Storage Company's warehouse daily. The new ordinance provides that a Government officer shall go on board and obtain samples of all the petroleum on board and forthwith proceed to test it. In this particular instance this was not done, but about five days after the steamer's arrival Mr. Halliley, the customs officer, proceeded to the store and drew samples. The importers had, however, previously to this supplied samples of the oil to Mr. C. E. H. Symons, who is possessed of the necessary apparatus for testing, and the result was most satisfactory, the flashing point being found to be so high as 80° and 80.5°. This appears to have satisfied Messrs. Volkart Brothers, and as a week elapsed after Mr. Halliley drew samples and nothing was heard from the Government, it was naturally concluded that the oil had passed the test, as we believe all Russian oil has done in the East wherever imported. About a week after this Mr. Halliley came to the store again and drew samples, but several days elapsed and again nothing transpired and the work of landing proceeded, and, finally, the *Castle Eden*, having discharged all her cargo, left the port. All this time delivery of numbers of cases of oil had taken place to various purchasers, and the store was being rapidly cleared of its contents, when on the 30th of last month—the day before yesterday—Messrs. Volkart Brothers received a letter from the colonial secretary informing them that the petroleum was found to be dangerous and giving them three days' time to adopt one of the three alternatives provided by section 12 of the ordinance, which are as follows:

- (a) To rectify the petroleum.
- (b) To apply for a license to import the petroleum as dangerous; or
- (c) To re-export the petroleum.

The colonial secretary further intimated to Messrs. Volkart Brothers that a prosecution had been ordered against them for having distributed the petroleum. This is, of course, the only point on which the Government can catch Messrs. Volkart Brothers, as they were granted a permit to land and store the oil from the principal collector of customs. A summons will issue to-day, and Messrs. Volkart Brothers intend to plead guilty to having distributed the petroleum, and this will render them liable to imprisonment for one month or a fine of 500 rupees. But it is impossible to acquit the Government of grave blame in this matter. Why did they not cause tests to be made directly the ship arrived, and why did they wait until three-quarters of the cargo had been landed and distributed to their knowledge before making a test? The *Castle Eden* arrived on the 11th of last month, and the Government only acquainted Messrs. Volkart Brothers with the result of their test on the 30th, nineteen days afterwards, and then give the importers three days to do three things, each of which is admitted an act of physical impossibility. There is no apparatus in Ceylon for rectifying petroleum; to apply for a license to possess dangerous petroleum means that the whole of it—140,000 tins—will have to be bottled and labeled and might as well be destroyed, for it will be of no use, and to tell them to export the petroleum when the ship is gone is of course absurd, seeing there is no means of shipment, and if there were no one would take it. Messrs. Volkart Brothers, therefore, told this plainly to the Government, and furthermore challenged the correctness of the test submitted by Dr. Attygalle, and said the oil was tested before shipment, and that the shippers guarantee the flashing point not to be below 76° F. Further, they stated that they have had tests applied here by competent persons which turned out satisfactorily, and begged the Government to direct the oil to be re-tested by some other officer. Finally, they gave notice that they hold the Government responsible for all losses and damages arising from detention and through wrongful classification of the oil.

This, of course, has stopped the delivery of oil from the store, but meanwhile, at the importers' instance, Messrs. Symons and Cochran are taking careful samples drawn from the whole consignment, and will submit half to immediate test and forward the other half by steamer to the Government tester in Bombay. Any petroleum having a flashing point below 76° F. is ranked as dangerous petroleum. The result obtained by Dr. Attygalle, whose second essay in this work it is, was that the flashing point of the oil in 14 samples varied from 73.6° to 75.3°. The Government is, it is said, desirous of making an example of Messrs. Volkart Brothers in this matter, but their new-born zeal in this direction is in strange contrast to the apathy which has allowed thousands of cases of oil, in contravention of the ordinance, to be stored in boutiques in the pettah and elsewhere. Further, it is rather hard on Messrs. Volkart Brothers, who have more than any other firm endeavored to comply with the requirements of the ordinance by building stores after the model and instructions laid down by the Government.

By waiting a fortnight before making the tests required by law the Government behaved most unjustly, even supposing their test is correct, which, in the face of Mr. Symons' test, we doubt. In Bombay the custom is as follows:

"On a ship's arrival a general manifest is entered. Then a few cases are landed by the preventive officer and delivered to the Government analyst, who grants the certificate the following day. Meantime discharging goes on into boats until the permit and certificate of test is granted."

This information has just been obtained by wire from Bombay by Messrs. Volkart Brothers, and shows how much more business-like is the action of the Government in Bombay. As regards the accuracy of the tests of Dr. Attygalle, it will be a serious matter for the Government if it turns out after all that they are inaccurate, and the claims of the importers, Messrs. Volkart Brothers, against them will be very heavy indeed. The Government is quite right to protect the public and enforce the ordinance, but such laxity as they have displayed in this matter is culpable.—TIMES OF CEYLON, *June 1, 1888.*

MESSRS. VOLKART BROTHERS BEFORE THE POLICE COURT OF COLOMBO.

In our last night's issue we had an article regarding the kerosene oil imported by Messrs. Volkart Brothers and the action of the Government on its alleged dangerous nature. Those proceedings have been followed up by the institution of a case in the police court of Colombo this day, when Mr. P. Daendliker, the representative of the firm of Messrs. Volkart Brothers, and Silva, the storekeeper, were charged by Mr. H. C. P. Bell, deputy collector of customs, with transporting kerosene oil before it was tested by the officer appointed by the Government for the purpose. Acting Solicitor-General C. P. Layard and Crown Counsel Fisher appeared for the prosecution, and Messrs. F. C. Loos and R. E. Perera, proctors, for the defense. The accused pleaded guilty to the charge. Mr. Layard stated that, as Mr. Daendliker undertook not to transport the oil again until the required test was made and the certificate given, the Crown will be satisfied with a nominal punishment. Mr. Loos submitted that the offense was committed entirely under a misapprehension, and that the oil was imported for other parties, who were allowed to remove it.

The court reserved judgment till Monday next.—TIMES OF CEYLON, *June 2, 1888.*

KEROSENE OIL.

With the prevalent activity displayed in the import of kerosene oil, the fear is also not unreasonably felt whether the speculation would not be carried to the extent of creating a reaction in favor of our "old love," cocoanut oil? Many persons who have for years used kerosene, and who have always been most grandiloquent in its praise, are amongst the foremost at present to decry against the kerosene now largely in use. I suspect it is the Russian *with Russian oil?* It is said to

TOBACCO CULTURE IN BELGIUM.

The culture of tobacco is of importance only in the provinces of Flanders and Hainault, though it is somewhat practiced in Brabant and Namur. The statistics of production are :

Year.	Area planted.	Production.	Number of plants declared.	Average product per hectare.
	<i>Hectares.</i>	<i>Kilograms.</i>		<i>Kilograms.</i>
1846.....	666	1,206,583	.....	1,810
1866.....	1,694	3,157,631	.....	1,864
1880.....	1,577	3,022,906	.....	1,917
1881.....	2,572	5,678,976	96,707,208	2,208
1882.....	2,428	4,533,076	90,321,600	1,867
1883.....	2,344	4,192,792	81,852,800	1,793
1884.....	1,700	3,165,000	61,584,865	1,862
1885.....	2,017	4,452,502	73,036,027	2,206
1886.....	2,070	.....	74,951,637	.....

In 1879 an excise was imposed, proportioned to the area planted, while heavy duties were laid on imported tobacco. The production rapidly increased. In 1883 the system of taxation was changed, and a duty of 3 centimes collected on every plant, the import duties being again increased. Production at once decreased, and the tax proved so heavy that, at the request of the planters, the Government made another change in 1883, the excise being reduced one-half. This has been followed by an increase in the area planted.

TONNAGE DUES IN PORTUGAL.

As referred to in Mr. Lewis' No. 124, the tonnage dues of this Kingdom have been materially modified by a law passed by the Côrtes and approved by the King on the 23d of June, 1888, the same to be enforced from the date of promulgation thereof.

The effect of this law is to increase the tonnage dues in all Portuguese ports, except in the port of Funchal, Madeira, in favor of which there are certain exemptions. This increase in the case of steamers amounts to 65 per cent. on certain classes and to 160 per cent. on others. This arises from the adoption of the Moorsom system of measurement. On the other hand, the same system applied to sailing vessels reduces the dues in all cases from 110 to 45 reis a ton. In all cases, other port charges, such as anchorage, pilotage, sanitary dues, etc., remain fixed as heretofore.

I inclose a copy of the law, with translation thereof. — LISBON, *June 28, 1888.*

J. B. WILBOR,

Vice and Deputy Consul-General.

[Translation.]

Dom Luiz, by the grace of God, King of Portugal and of the Algarves, etc. We make it known to all our subjects that the general Côrtes decreed and we will the following law :

ARTICLE 1. Tonnage and anchorage dues, as applicable to national and foreign vessels in the ports of the continent of the Kingdom and adjacent islands of Azores and Madeira, shall be hereafter regulated and collected according to the following provisions :

Except: (a) National or foreign steamers belonging to lines which perform regular service and are subsidized as mail boats, whether they commence their voyages in the ports of Portugal or touch there at least once a month, shall pay 20 reis per ton if they gratuitously take in and out the mails, and 25 reis if that transportation be not gratuitous.

(b) Steamers not employed in the subsidized service of the post-office, although they may transport mails gratuitously, when they come for cargo or passengers, or even to disembark passengers or part of the cargo, will pay 30 reis per cubic meter.

(c) Vessels coming in or going out without any commercial operation, or those included in any other cases of exemption maintained in Article 2 of this law, shall not pay any tonnage duty. But, in these cases, when vessels remain in port beyond the time or beyond the conditions indicated by the regulations, the Government can claim anchorage duty not superior to the minimum fixed by this law, which shall be fixed by the same regulations.

(d) Vessels leaving the Douro shall pay double the duties established by the present law, half of it being exclusively applicable to the improvements of the bar, in substitution for the actual special tax levied by the decree of February 15, 1790.

Second. The admeasurement of vessels in tons shall be calculated, for the intents and purposes of this law, at the rate of 2.83 cubic meters per stowage ton. The total number of cubic meters is to be divided by that figure, as arrived at by Moorsom's process, and the quotient will show the number of tons liable to the respective tax.

When there are no papers on board, or when these do not contain the necessary indications in the respective regulations, the capacity of the vessels in cubic meters shall be determined by the Moorsom process of measurement of loaded vessels, or rule second of the Moorsom system.

Third. Vessels shall be free of any tonnage duty in the port of Funchal for five years, counting from the promulgation of the present law, except in face of contracts, or those of companies subsidized by the state.

ART. 2. Remains in force what is required in Articles 3, 4, 5, 6, 7, 8, 9, and 10 of the law of December 27, 1870, and what is prescribed in Nos. 1 and 10 of Article 151, and in Articles 152, 153, 154, 156 and its paragraph, all of the law of June 4, 1886; all contrary legislation being revoked, including decree of February 15, 1790, No. 9 of Article 115 of the decree of June 4, 1886, and No. 8, Article 93, of the law of July 29, 1886.

We, therefore, order all authorities to whom belong the knowledge and execution of said law that they fulfill and keep it, and make it be fulfilled and kept in its entirety.

AGRICULTURE IN NORTH CHINA.

Agriculture among the Chinese was the invention, according to their own statements, of the Emperor Shen Neng, who, succeeding Fuh-hi, the first Emperor of China, ascended the throne 2,737 years B. C. It was he who "first fashioned timber into plows and taught the people the art of husbandry." He also discovered the medicinal virtues of plants and instituted the custom of holding periodical markets for the barter of commodities.

The Chinese, from that legendary time to the present, have always been agricultural people, and their Emperors, without regard to race, whether

the vernal equinox, to the Temple of Agriculture and, after plowing with his own hands a few furrows, offers sacrifices at the four altars of the gods of heaven, the gods of earth, the planet Jupiter, and the Emperor Shen Neng. Notwithstanding the great antiquity of this art among them, and the great respect in which it is held, the Chinese have failed to make any great progress in it. Their system of cultivation is very careful and marked by attention to details, but shows ignorance of the principles of rotation of crops, adaptation of soils to particular grains, and an extremely primitive knowledge of agricultural implements. Their fields are treated like immense gardens. They are subjected to the most constant and watchful care, both at time of planting and during the growth of the grain. When ripe, the crop is gathered by hand with the utmost completeness; not a straw or leaf, scarcely even a root, being allowed to remain.

In threshing grain the Chinese spread it out on a smooth clay floor in the open air, there being such a threshing floor adjoining every farm-house, and either by threshing with flails or by rolling a stone roller, drawn by a donkey, over it detach the grain. The chaff is removed by tossing the grain into the air in a slight breeze, the kernels of grain falling straight to the ground, the chaff and dust being blown aside.

The two most characteristic features of Chinese agriculture are the use of manure and the systems of irrigation. Manure is gathered from all conceivable sources. In the cities the night-soil deposited on the sides of streets and alleys is gathered by men and boys in buckets and mixed with clay, dried in the sun, and sold to farmers. On country roads boys, and often girls and women, are seen at places where large numbers of pack-horses, camels, and mules pass, gathering into baskets the material which is afterwards, with such beneficial effects, spread upon their fields. Earth from the canals, rivers, and city streets is also carted away for the same purpose. "Other substances are diligently collected," says Williams, "as hair from barber shops, exploded fire-crackers, and sweepings from the streets, lime and plaster from kitchens and old buildings, soot, bones, fish, and animal remains." The quantity of these fertilizers used and the importance the Chinese attach to them are proved by the number of people whose livelihood is gained in their collection.

In irrigating his land the farmer uses many devices. Where running water is at hand he turns it to advantage by directing it over his fields in large channels, banked in with clay, and subdivided into smaller and smaller streamlets, until every part of the ground has been reached. If no running water is found, wells are dug and water drawn up by hand and poured into the main ditches, which are subdivided into numerous smaller ones. Holes are dug in which rain water accumulates, which is baled out when needed. The raising of this water is in most cases, especially in the vicinity of Peking, done very laboriously by hand. Windmills, of which there is not one around Peking (if anywhere in China), might be used for

Chinese agricultural implements are of the rudest character. They are, chiefly, the plow, the hoe, the harrow, the rake, and the stone roller. The plow is simply a broad blade fastened to a rough handle, guided by a man and drawn by teams of the most miscellaneous description; it cuts a furrow never more than 6 inches deep, and frequently only 2 or 3. The teams are made up of horses, donkeys, mules, bullocks, and human beings, it being not unusual to see a man or boy and any one or more of the animals above named drawing the same plow. Chinese farmers measure the depth of the furrows by the fingers, and frequently speak of plowing only 2 or 3 fingers deep. The reason of this seems to lie in the difficulty of making a deeper furrow with their plows, and not because they are unaware of the advantage of it. The hoe is a much more effective tool, and it is with this that they work between the furrows of grain after it has sprouted.

Foreign agricultural implements, especially plows, might be introduced with good effect among the Chinese, except that the price would deter all but very few from buying them. A Chinese plow can be bought for the equivalent of two or three Mexican dollars, and smaller tools in proportion. There are no great stores devoted to the sale of agricultural implements as with us, they being made by hand, either by a neighboring blacksmith or by the farmer himself, as occasion demands.

The unit of land measure in China is the mou, commonly translated acre, but of which 6.61 constitute 1 English acre. The table of land measure runs as follows: 100 square inches = 1 square foot (1 Chinese foot = 14.1 English inches); 25 square feet = 1 pace (or yard); 4 square yards = 1 chang (rod or pole); 6 chang = 1 fen (or rood); 10 fen = 1 mou (or acre); 100 mou = 1 ching. The mou, however, varies in other provinces.

In measuring grain the tables used are somewhat similar to our own, the unit being the sheng, which contains nearly an English quart. The Chinese grain measure runs as follows: 3 cups = 1 sheng (or quart); 10 sheng = 1 tou (or peck)*; 10 tou = 1 tan (or picul). The number of tou in a tan varies, however, with various systems of measures in different localities and in the same locality. By the "Tien-Tsin measure," as it is called in Peking, and which is the standard, 10 tou = 1 tan. It is common, however, at the markets to sell by a measure called "the nine-six," because it contains only 9 tou 6 sheng to a tan, or is 4 sheng short of proper weight. The various gates of Peking also have standards differing from one another, and in retailing it is common for dealers to sell by what is called the "door measure" (mên tou), containing only eight or nine tenths of the full amount. The price of grain varies, of course, with the measure used.

The principal crops in the vicinity of Peking, besides the fruits and vegetables, of which there are almost all that are found in western countries, are numerous varieties of millet, beans, Indian corn,

Wheat in North China is planted in two crops, known as autumn and spring wheat, of which the autumn wheat, in both quantity and quality, is superior. This is planted at about the autumnal equinox, or, at the latest, not after the semi-monthly period known in the Chinese calendar as the "cold dew" (about October 8). It is harvested at about the summer solstice. The yield per Chinese mou is estimated in a good year at 1 tan, or about 240 pounds, or nearly 1,700 pounds per English acre. Wheat is not, however, sown broadcast. It is carefully sown in furrows about 18 inches apart, leaving room between furrows for hoeing, in which, when the wheat is partly grown, some vegetable crop is planted. The seed required to sow a mou of land is about 17 to 20 pounds, or nearly 130 pounds to the English acre. The seed, say the Chinese farmers, should be sown in damp ground.

The price of wheat in Peking varies every day, just as in other centers, according to supply and demand. It is fixed by brokers at the markets, who are under official supervision, and who arrange sales and measure out the grain, receiving a small commission. A Chinese tan (about 240 pounds) was quoted in Peking a few days ago at 2.6 taels*, or \$2.85 in United States currency.

Spring-wheat is only sown when, by reason of excessive rains or other unfavorable causes, the ground is not ready for the autumn crop. It is then sown at about the spring equinox, or not later than the period known as the "pure brightness" (about April 5). It ripens at the same time as autumn wheat, but produces some 20 to 40 pounds less grain per mou, and is of inferior quality.

Both spring and autumn wheat are used exclusively for the manufacture of flour, being ground by mills worked by hand, horse, or donkey power, or, rarely, by water-power.

Barley is planted by the Chinese at about the spring equinox, and harvested at the summer solstice. It is planted in the same manner as wheat, producing a few pounds more per mou and requiring about half as much seed. This grain, when husked, is used as a substitute for rice; also mixed with a kind of pea, grown in this vicinity (the wan-tou, resembling the marrow-fat pea), it makes a ferment for wine.

Barley is worth about 2.7 taels per tan when husked, and about half this sum otherwise.

Buckwheat, called by the Chinese "triangular rice," is sown during the thirty days following the summer solstice and harvested in early October. It produces about 1½ tan per mou. It is used solely for the manufacture of flour and is worth about 1.5 taels per tan.

There are several varieties of millet grown in North China. They are all planted in early April and gathered in early September. Among them are the tall millet, producing a red grain, and one exactly similar, except that the grain is white. The red is used as food for horses and to manufacture wine; the white, which is of a superior quality, is made into flour for human

consumption, and costs slightly more. The tall, slender stalks of this grain are used for making thatched roofs, instead of lathing for ceilings, and for a number of similar purposes. The grain is worth from 1.6 to 2 taels per tan.

The variety of millet known as "Italian millet" is grown in immense quantities in various parts of China. It is an exceedingly productive grain, 7 or 8 pounds of seed to the mou producing over a tan of grain. It is eaten boiled when unground, and is also ground into a fine yellow flour. A tan costs about 1.6 taels, twice that sum when husked. Two varieties of the paniced millet are found near Peking, resembling one another, except that one, called by the Chinese "shutzu," is exceedingly glutinous, while the other is not. In time of sowing, quantity harvested, etc., it resembles the millet last mentioned.

Indian corn is planted in early April, or never later than the last of May. The grain is ready for harvest by the middle of September. A mou of land takes about 12 pounds of seed, and produces about 1 tan (6 or 7 tou) of grain. Corn is sown by the Chinese in furrows, about as in America. The grain is made into meal for human consumption. It costs, shelled, 1.6 taels per tan.

Beans of many varieties are grown in immense quantities in North China. They are distinguished by the Chinese as yellow, white, green, black, etc. They are used for a variety of purposes, such as the extraction of oil, manufacture of vermicelli, the manufacture of soy (a kind of pickle), flour for a stuffing for cakes, ferment for wine, and as food (chiefly the black beans) for horses and camels. These beans are generally planted at about the summer solstice (though sometimes in early April), and ripen at the autumnal equinox. The price of a tan varies from 2.1 to 2.8 taels, according to the use to which they are put, the costliest being the variety used in the manufacture of vermicelli.

Sesamum is grown solely for the oil extracted from it. This oil, called "fragrant oil," is used extensively by the Chinese in cooking, and sometimes for illuminating purposes.

Hemp is grown for the manufacture of rope, the variety found in North China being the abutilon hemp. It is sown in furrows, very wide apart, and produces about 1 tan to the mou.

Both upland and wet rice are grown in the vicinity of Peking, the former producing an inferior grain. The subject of rice culture has always ranked with the manufacture of silk and the growth of tea as the three most characteristic pursuits of the population of China. They have been the themes of many books and treatises by both foreigners and natives. Chinese Emperors and Empresses have often interested themselves in these pursuits, and have done all that they could to assist and encourage the people in following them.

During the Yäan or Mongol dynasty, in 1210, an illustrated work on rice

lished in China. These branches of agriculture have been too exhaustively treated to render it desirable to more than mention them here.

A comparison of the yield of the fields of China with that of American farms would be interesting if it could be accurately made. The difference between the styles of planting makes this difficult, if not impossible, the grain in America being sown broadcast, or drilled, while in China all cereals are carefully planted in furrows, wide distances apart. The absence of any statistics as to the average product per acre, such as are found in the United States, makes this comparison much more difficult, the products, as given above, being the yield of good land for a good year. It is probable, however, that, in proportion to the quantity of seed sown, the farmer of North China gets a larger return than the average return in America. This would be the natural result of his careful system of planting, harvesting, and threshing, involving no loss whatever. The saving in America effected by using drills instead of sowing broadcast is an index of the probably greater gain of the Chinese method. This is not to say, however, that the gain is sufficient to compensate for the great extra labor.

The Chinese system of growing two crops on the same ground at the same time, while advantageous in some respects, can not be regarded with approval. It is probable that a deterioration results in the quality of both, if not in the quantity of the yield.

China is essentially a treeless country. Importations of wood come chiefly from the United States, the Spanish Islands, Hainan, and Formosa. Were it not for the countless cemeteries in China trees would be rarely seen. These cemeteries are planted with pines and cedars, and dot the landscape with agreeable effect.

Owing to the vast spaces occupied by the grounds of princes and mandarins, trees are numerous in the cities. Peking, from the city wall, presents in the spring and summer the appearance of a great grove. The houses are largely hidden from view by the foliage.

The overflow of the Yellow River has turned the attention of the Chinese to arboriculture. I inclose herewith an interesting proclamation by the viceroy Li on the subject. The "eight directions" and the "ten benefits" are worthy of perusal by our own people.

The peepul puti (*fiscus religiosa*) at the south and the sophora at the north and other aged trees are worshipped for long life (Williams, Vol. 1, p. 259).

There is an example of this worship just outside of the city walls of Peking. A huge trunk of a tree said to be seven hundred years old is inclosed in a building. A priest is in charge of it, and worship is had there at stated periods.

In a crowded country like China, where population crowds, in spite of the utmost frugality and diligence, close upon the means of subsistence, any improvement in agricultural methods, increase in the production of old crops, or introduction of new ones from abroad

In this last respect the debt of the people of China to Western countries, though unknown and unadmitted by them, is beyond calculation. It would be interesting to know just what grains, etc., were indigenous to this soil or were brought by the earliest comers; but this, of course, is impossible. Wheat, at one time believed to have come from Asia, is now known to be indigenous to certain districts on the Mediterranean. Indian corn is probably a comparatively recent importation, and tobacco is proved by its Chinese name to be of foreign origin. Irish potatoes are of so recent advent that their use is not yet common among the people. Many other vegetables and fruits are just beginning to obtain a foothold here. — PEKING, *April 23*, 1888.

CHARLES DENBY.

VICEROY LI'S PROCLAMATION ON TREE CULTIVATION.

A proclamation from Li, Viceroy of Chihli, etc., to exhort the people of his province to cultivate trees after approved methods, with the view of securing benefits to the people and the country.

One of the first principles of governing a state is to look into the nature and uses of its land, to ascertain how it may best surbserve the benefit of individuals and the purposes of the state. In the province of Chihli the soil of her alluvial plains is soft and fertile, and this fertility extends to a great depth. Arboriculture is, therefore, rendered so much the more easy and advantageous. But at present in the various prefectures of Chihli, aside from the several species of fruit trees, such as the chestnut, pear, peach, apple, and apricot, other kinds of trees are rarely seen, as the mulberry and the ching tree (a thorny bush) of Yung-p'ing-fu, which is used for making a species of paper, and for medicinal purposes. In consequence of this general lack of tree culture, vast tracks of fertile plains are left barren, presenting a most monotonous and uninviting appearance. In looking for the cause of this treeless barrenness, it is to be found in the high winds which prevail over these northern parts. When trees are newly planted their roots are easily shaken and disturbed, and unless planted to a great depth they can not withstand the wind. Many of the peasants do not understand the loose nature of the surface soil, and, consequently, by not planting their trees to a sufficient depth, or selecting moist solid ground for planting, they lose their trees, and their labor becomes fruitless. Few of them ever study the principles of arboriculture, and, as a result, they become discouraged by their non-success, and, giving up the industry altogether, they allow the rich alluvial lands to lie unutilized. The viceroy has in recent years given orders for the planting of willow trees along the banks of the various rivers and streams in Chihli, as a prudential measure for strengthening and protecting the embankments.

If successful methods of tree cultivation in salt lands have been found, how much more easy will it be to carry on arboriculture on rich level plains? Therefore, the authorities of various prefectures, sub-prefectures, and districts of Chihli are hereby instructed that they must procure the necessary seed trees, and inform the people of their respective jurisdictions of the "eight directions of tree plantation" and the "ten benefits to be derived from same," which accompany this proclamation. Having these directions given them, the people may proceed with tree plantation, at first experimentally. Measures should be adopted to encourage the people in this industry, and no official agents should be sent who, on the pretext of inspecting and reporting the progress of tree cultivation, really disturb and oppress the people. But at the end of every year the people should be required to submit a statement giving the number of trees planted, the condition is, etc., so that the

people should all know that the earnest desire of the viceroy in ordering this system of tree cultivation is that another source of obtaining a livelihood may be afforded the peasants; that droughts may be prevented; that river embankments may be strengthened; that the rain-fall may be regulated; that the country may be beautified, etc. The "eight directions" and "ten benefits" are appended below.

THE EIGHT DIRECTIONS.

1. On account of the loose nature of the soil near the surface the cold penetrates to a considerable depth and very easily injures the roots. To fortify the roots against injury from cold and other causes a fertilizer should be used when planting trees, this fertilizer to be prepared by burning a mixture of dung with grass and then adding to it a proportionate quantity of earth. After putting in the fertilizer the roots should be carefully and sufficiently covered.

2. After a tree has been securely planted a small cumulus of earth should be placed around it, 6 or 7 inches high, and this cumulus should be renewed at the approach of every winter until the end of the third year after planting. In this manner the tree will be unaffected by the wind or cold and can not possibly fail to grow. If this is not done the vitalizing moisture in the earth will escape, and the roots will lack their natural necessary nourishment.

3. In places which are exposed to the high winds trees should be planted at least $3\frac{1}{2}$ feet deep. Without this depth the rich part of the soil will not be reached, and tree planting can not be successful. In the case of the willow and trees of that kind, their outspreading and dependent branches should be carefully pruned, in order to preserve the nourishment for the trunk and main branches.

4. Where the soil is poor and sterile it should be improved by the introduction of some rich earth, and adding to it some suitable fertilizer.

5. In the case of the oak, elm, willow, mulberry, poplar, cypress, etc., they shed their seeds every year, which, falling into proper ground, will take root and grow into young trees. To prepare the earth for the growth of the seeds, a trough should be dug around each tree and filled with water in order to keep the soil moist.

6. With willow and mulberry trees planting should take place in the spring, when there is rain. In one year's time the cuttings will have taken root. But before planting the young shoots the soil should be well loosened and fertilized, and grafting should take place after the rain. After planting, the graft trees should be well watered every other day.

7. In transplanting trees strict care should be exercised. Every tree has three vertically-projecting roots which will dry up if exposed to the wind or sun. Wait till there is rain, and then, having dug a small hole by the side of the tree, carefully cut away one of these straight roots. This process should be repeated after half a month should there be rain; if not, a month must elapse before the second operation. This is to be repeated until the three roots have been cut away. While these roots are being cut innumerable new rootlets will be thrown out, and these, as soon as the tree is transferred, will quickly take to the earth. In case of there being no rain, however, they should be well watered.

8. In trying to raise trees from the seeds of the mulberry, oak, etc., some fertile spot should be chosen and prepared, and then plant the seeds in the same manner as one plants seed of grain. The spring is the best time, and when there is rain. In one year's time young trees, 1 or 2 feet high, will spring up, and these can be easily transplanted.

THE TEN BENEFITS.

1. By planting trees along river banks, where the soil is loose and sandy, the banks will increase in height, and the roots, by their numerous ramifications, will bind and strengthen the soil against the pressure of currents and floods.

2. By covering the mountains on the borders with the pine, elm, willow, etc., a large industry in timber will spring up, which will afford abundant material for house building and other purposes.

3. By planting trees about the fields and farms, they will serve to absorb the superfluous moisture and preserve a just equilibrium of "wind and fluid influences."

4. Where there is an abundance of trees rain will be plentiful, and no droughts will occur in spring or summer.

5. An abundance of trees can also ward off epidemics, and where the people dwell closely together more trees ought to be planted, because they will absorb the carbonic acid and other noxious gases.

6. By having an abundance of groves and trees, travelers and families can find rest and shelter in summer under their shade.

7. Trees and forests being plentiful, they will obstruct the free operation of highwaymen and banditti.

8. Extensive forests of trees on the mountains of the remote borders will serve to absorb a great part of the snow when it melts in the spring.

9. The wretchedly poor peasants, by having a number of trees of their own, will derive sufficient fuel for their needs out of the branches, which they can prune away every year with benefit to the trees.

10. The [*] tree and the [*] trees are of two species, the large leafed and the small leafed; and the [*] (*quercus Mongolica*) is also of two species, the red bark and the white bark. These and the oak can afford food to the silk-worm, and in cold mountainous regions, where the silk-worm subsists merely on the leaves of these trees, they weave a cocoon which, when made into silk, is much cheaper and more durable than that made from the cocoon of the mulberry silk-worm.

RUSSIAN KEROSENE IN AFRICA AND SPAIN.

[From an article on Russian kerosene trade with Tunis and Spain in the Moscow Gazette, June 13, 1888.]

Until the year 1885 Russian kerosene was quite unknown in Tunis. In the interior only vegetable oils were used for lighting purposes, and in towns near the sea-border and sea-ports of Tunis only American kerosene was obtainable, it being supplied either direct from the United States or through commission houses in Malta and Italy.

In 1885 the Genoese merchants first began to supply Tunis with Russian kerosene, and it immediately gained the day and drove the American oil almost completely out of the market.

The following figures taken from a statistical report published by the Tunis Government shows the value of the kerosene imported in 1886 and 1887:

	1886.	1887.
Russian kerosene.....	\$40,230	\$39,415
American kerosene.....	15,475	580

In 1888 the demand for Russian kerosene increased considerably, owing to the orders that came from the interior, where it has begun to supplant vegetable oils.

The trade in Russian kerosene at Tunis is still in its infancy. It has but just commenced, and the oil is only supplied in soldered tins of about 3½ gallons each.

2. importation of our kerosene

nies were to establish a central depot at Tunis a large and profitable trade would no doubt result. The whole of the northern coast of Africa, including Algeria and Tripoli, could eventually be supplied with Russian kerosene. But should such a depot be established it would certainly be much more advantageous to supply the kerosene in casks or in bulk, as the tins add considerably to the cost of the oil.

Such a change would also be of great benefit to the Russian merchant fleet. The Italian steamers, which at present monopolize the carrying of our kerosene in tins, are not allowed to carry inflammable oils, unless hermetically sealed; the transport in casks or in bulk would therefore pass over, without competition, to the Russian merchant ships, and would be carried from one of our Black Sea ports direct to the central depot in Tunis.

A still more important market for Russian kerosene is Spain. According to existing statistics the consumption of it amounts to about 44,000 tons. The duty on kerosene imported into Spain is the same wherever it be imported from, no difference being made; as, for instance, in the case of spirits, where we are at a great disadvantage, as compared with Germany, the latter, as a more favored nation, paying but \$4.08, whereas Russian spirits pay \$4.58.

With kerosene this is not the case. We are placed on an equal footing with America, and we should lose no time in securing the Spanish market; if not in its entirety, at all events a fair share of it. I will now endeavor to show what conditions we have to meet in order to successfully compete for this trade.

The Spanish Government in its desire to protect the trade in vegetable oils of native production levies a heavy duty upon mineral oil in its crude or unrefined state, and a much heavier duty on refined kerosene, in order to encourage the refining of it in Spain. The duty was at one time \$5.07 per hectoliter (about 22 gallons) of refined kerosene, and \$2.32 for unrefined, and the results were that in 1886 only 580 tons of refined kerosene and 45,000 tons of crude or unrefined kerosene was imported, and several refineries were erected, giving a very handsome profit to their owners. With a view to still further protecting the vegetable oils of native production, the duty on refined kerosene was again raised to \$6.18, and for refined to \$4.05.

Under those conditions the importation of refined kerosene has become extremely difficult, but to import refined Russian oil is quite impossible, because the American gives much less residue; the consequence being that more refined kerosene is obtained from it than the Russian. Russian naphtha gives as much as 35 per cent. residue.

In order to compete successfully with America it is necessary to refine our naphtha at home, in Russia, to such an extent as to leave no more than 21 or 22 per cent. of residue in it—it then pays the duty of unrefined kerosene, because all kerosene imported into Spain containing more than 20 per cent. of residue is classed unrefined.—Moscow, *June 1-13, 1888.*

COMMERCE OF GIBRALTAR.

The intention on the part of the British Government to establish some sort of a custom-house at Gibraltar, with the sole object of suppressing the smuggling of tobacco into Spain from this fortress, although considered to be as yet an open question, seems to be at this moment in a state of temporary abeyance, no doubt the consequence of the continued perseverance and earnest remonstrances on the part of the commercial community of Gibraltar against the carrying out of any such projected measure, which it is generally accorded would be an act of open hostility towards the common interests of its inhabitants, who certainly are not responsible for the carrying on of this smuggling trade by the neighboring Spanish people, since the trade in tobacco is carried on in this market in as legitimate a manner as in any other tobacco market in the world.

It would seem that the different chambers of commerce in Great Britain uphold the remonstrances of the Gibraltar commercial community most strenuously, as it must be quite manifest to the Spanish Government that the actual stringent restrictions which are vigorously exercised by the local authorities of this fortress to prevent tobacco from being introduced into Spain by the land communication, added to the very strict port regulations adopted towards the clearance of Spanish lateen crafts departing daily from this port, offer a clear proof of the unquestionable and sincere desire of the British Government to assist Spain against any infringement upon her revenues from this quarter. In fact, the British Government has recently gone so far as to increase the civil police force outside the gates of this fortress, close to what used to be called the "neutral ground," where the Spanish officials now stand guard for the special purpose of preventing stragglers from the Spanish lines from loitering around the British outposts.

Such proceedings between two foreign powers may be justly regarded as quite a special act of comity on the part of Great Britain towards Spain, which I may add entails upon the Gibraltar colonial fund an extra expense of several thousands of pesetas annually, besides subjecting the tenants of store yards and other outside buildings, on that particular part of the garrison territory, to constant vexatious police interference, with the view of preventing any abuses being committed in harboring tobacco within the British lines in favor of the Spanish smugglers. — GIBRALTAR, *July 2, 1888.*

HORATIO J. SPRAGUE,

Consul.

EGYPTIAN RAILWAYS AND TELEGRAPHS.

the railways and telegraphs of Egypt

consist of two foreigners and one native. A year ago, without any revision of this agreement, the native commissioner was removed and a foreigner put in his place. The commission has since been composed wholly of foreigners, and no foreign power has entered a protest.

Five-sixths of the railway mileage of Egypt was built under Ismail Pasha. There has been no extension since his removal from the Khedivate, and there is no prospect of extension.

The commission's report for the year 1887 shows that there is at this time in operation only about nine-twelfths of the mileage originally completed. In 1887 there were operated 900.56 miles—the same as for five years past.

A great portion of the telegraphs originally constructed have been abandoned—the entire Soudan system, from Wady Halfa southward, and the greater part of the Red Sea service.

Besides the railways and the telegraphs the commission has attached to its administration the port of Alexandria.

Total receipts are as follows:

For 1887	£ E. 1,452,250
For 1886	1,419,492
Total increase.....	<u>32,758</u>

Analyzed, this result is obtained in the following manner:

Increase in railways.....	£ E. 30,272
Increase in port of Alexandria.....	<u>4,665</u>
	35,937
Decrease in telegraphs.....	<u>2,279</u>
	32,758

The commercial work of the railways has been as follows:

	1886.	1887.
Cotton	£ E. 164,361	£ E. 165,222
Cotton seed	86,922	90,230
Cereals	93,402	127,133
Sugars	46,399	42,255
Molasses	8,143	7,928
Animals.....	5,396	5,798
Coals	72,726	76,490
Divers articles	294,179	276,018
Totals	<u>771,528</u>	<u>791,074</u>

Comparison shows an increase in commercial work for the year 1887 of £ E. 67,943.

The number of persons traveling on the railway lines in 1887 were as follows:

First class	77,225	£ E. 39,594
Second class	384,082	79,432
Third class	2,692,548	247,749
Military		

The total number of passengers in 1886 was 3,138,810, and the receipts £ E. 390,514.

The total accounts of the administration for 1887 are most elaborately classified in the report, but I see no necessity in presenting them in this statement more extendedly than as follows:

Receipts.

Railways	£ E. 1,305,680
Telegraphs	34,891
Port of Alexandria.....	111,679
Total	1,452,250

Expenses.

Railways	£ E. 567,035
Telegraphs	38,824
Port of Alexandria.....	27,762
Total	633,621

Of receipts, there were turned over to the Caisse de la Dette Publique £ E. 779,127, and to the finance department £ E. 7,009, the remainder being converted to rights acquired, etc. The large sum annually set apart for the public debt, under mortgage to European bondholders, diverts almost the entire earnings from improvements, and the result is that the roads are not in good condition. The nature of the country and the climate preserves the beds much longer than in other countries. The rolling stock is very inferior, and much of it in very bad condition.

It may be of interest to state that in 1887 there were transmitted over the Egyptian telegraph wires 601,861 messages, of which 335,798 were service and the remainder paid messages. Of the latter there were 113,004 internal messages in Arabic and 131,142 in European languages. The balance were messages sent to foreign countries.

The administration of the port of Alexandria has grown rapidly from a point of insignificance to one of importance, as shown by the following table of figures presenting receipts and expenses since May 19, 1879, when the administration began:

Year.	Receipts.	Expenses.	Net receipts.
	£ E.	£ E.	£ E.
1879.....	23,819	2,950	20,869
1880.....	52,031	8,814	43,217
1881.....	72,046	14,168	57,878
1882.....	66,659	18,791	47,868
1883.....	70,597	31,378	39,219
1884.....	83,408	35,279	48,129
	96,991	24,277	72,714

A classification of receipts is also of interest. This is presented as follows:

Year.	Ton- nage.	Wharf- age.	Ballast.	Rental.	All others.
1880.....	35,219	12,418	2,087	.....	2,318
1881.....	31,437	33,456	2,475	2,332	2,346
1882.....	28,894	28,904	1,527	4,661	2,672
1883.....	28,732	32,076	2,083	5,078	2,628
1884.....	35,974	33,446	2,486	6,807	4,696
1885.....	36,565	46,022	2,504	8,532	3,368
1886.....	36,022	57,017	2,181	9,741	2,052
1887.....	38,771	59,962	1,571	8,973	2,402

The following table shows the entries and departures of vessels at the port of Alexandria for the same period as is embraced in the tables presenting receipts and expenditures:

Entrances and clearances of vessels at the port of Alexandria for the years 1880 to 1887, inclusive.

Years.	Entries.					
	Steamers.	Tons.	Sailing vessels.	Tons.	Total.	
					Vessels.	Tons.
1880.....	1,045	1,008,817	1,307	184,704	2,352	1,193,521
1881.....	1,074	1,068,104	1,291	179,803	2,365	1,247,907
1882.....	1,058	1,095,233	903	124,444	1,961	1,219,677
1883.....	980	1,028,902	792	125,071	1,772	1,153,973
1884.....	1,114	1,279,232	1,124	188,733	2,238	1,467,965
1885.....	1,118	1,347,965	1,203	186,442	2,321	1,534,407
1886.....	1,084	1,340,026	1,183	172,900	2,267	1,512,926
1887.....	1,197	1,468,274	1,031	149,762	2,228	1,618,036

Years.	Departures.					
	Steamers.	Tons.	Sailing vessels.	Tons.	Total.	
					Vessels.	Tons.
1880.....	1,067	1,037,661	1,266	183,074	2,333	1,220,735
1881.....	1,073	1,074,796	1,323	177,098	2,396	1,257,894
1882.....	1,027	1,061,501	872	127,130	1,899	1,188,631
1883.....	986	1,036,697	781	122,279	1,767	1,158,976
1884.....	1,101	1,262,461	1,107	183,214	2,210	1,445,675
1885.....	1,121	1,369,283	1,182	174,363	2,303	1,543,646
1886.....	1,091	1,347,649	1,170	171,082	2,261	1,518,731
1887.....	1,191	1,462,502	1,045	152,026	2,236	1,614,528

The following table shows the percentage of the total exports of the under-mentioned countries exported to the United Kingdom, Germany, France, and the United States, respectively, in the under-mentioned years :

Country or group.	To the United Kingdom.		To Germany.		To France.		To the United States.	
	1875-'77.	1884-'85.	1875-'77.	1884-'85.	1875-'77.	1884-'85.	1875-'77.	1884-'85.
	<i>Per Ct.</i>	<i>Per Ct.</i>	<i>Per Ct.</i>	<i>Per Ct.</i>	<i>Per Ct.</i>	<i>Per Ct.</i>	<i>Per Ct.</i>	<i>Per Ct.</i>
European countries...	23	22	17	20	14	15	3	4
Egypt.....	73	64	.....	.....	11	9	.....	.....
American countries...	52	50	8	8	8	9	5	6
China	42	35	.....	.....	.....	.....	10	14
Japan	10	9	.....	1	.....	20	40	42
British possessions...	49	43	0.2	0.4	3.8	4.9	6.4	7.9

MANUFACTURE OF PROPELLER BLADES.

[From Glasgow Daily Mail, July 5, 1888.]

It will be remembered that at the twenty-ninth session of the Institution of Naval Architects, the Earl of Ravensworth presiding, a paper was read by Mr. W. C. Wallace "On the material best suited for propeller blades." Mr. Wallace, as a matter of cost, found that cast-iron was £24 per ton; steel, £38; gun-metal, £130; manganese bronze, £135; phosphor bronze, £170; Delta metal, £115; and aluminium bronze, £145. This showed very much in favor of cast-iron and steel for first cost. The life of cast-iron blades, apart from accidents, is about six years, and of steel about four. In the discussion which followed, Admiral Colomb said he had been horrified at the amount of corrosion and pitting in cast-steel propeller blades. Mr. J. F. Hall, of Messrs Wm. Jessop & Sons, Limited, Sheffield, expressed the opinion that as all the corrosion—or rather pitting—took place at one particular part, on the idle side of the blades, it was occasioned by the sucking tendency caused by the blades always working in the same direction, and thus in time drawing out of the steel the particles or molecules which had not sufficient affinity in themselves to hold together as corrosion went on. He considered this to be entirely due to the use of so-called mild or soft steel. He had always thought it a mistake to make steel blades too soft. If he were asked his opinion as to the best material for propeller blades, he should advocate the use of a steel of very high tensile strain, say from 70 to 75 tons per square inch, with an elongation of from 7 to 10 per cent. in 10 inches, and capable of bending to an angle of 50 degrees. Such a steel could now be produced, and, if required, he was prepared to make it. * * * As already indicated in the discussion given above, and well known to sea-going engineers and ship-owners, corrosion very quickly sets in upon the backs of propeller blades, and to a much greater degree in steel than in cast-iron, and no efficient remedy has previously been found for it. The first cost of manganese-bronze or gun-metal blades will always be a serious consideration with ship-owners, and, therefore, the improvement of iron and steel blades is of the first importance. Mr. Willis' invention consists in a coating of copper united to the casting, this being effected by the copper plate, properly bent to shape, being placed in and forming part of the mold, into which the iron or steel is then poured, with the result that the copper is firmly united by fusion to the iron or steel face. Some samples of steel and copper united in this manner have been inspected by us. The joint appears to be perfect, the steel and copper being fused together and firmly united. anti-corrosive metals, several of which are now undergoing tests. That several blades with

GENERAL NAVIGATION OF FRANCE.

The French customs authorities have just published the following table of general navigation of France, viz, navigation to distant ports and great fisheries, but excluding coasting trade:

	Tons.
Marseilles.....	6,615,803
Havre.....	3,549,114
Bordeaux.....	2,006,898
Cette.....	1,370,540
Dunkerque.....	1,302,952
Rouen.....	977,586
Calais.....	917,725
Dieppe.....	751,979
Boulogne.....	774,359
St. Nazaire and Nantes	777,111
Bayonne.....	239,519
Nice.....	124,121
Total	19,407,707

The same paper for the same year states the general navigation of Germany to have been 20,122,348 tons, exceeding that of France by about 700,000 tons. — HAVRE, FRANCE, *July 13, 1888.*

F. F. DUFAIS,
Consul.

TREATMENT OF DISEASES OF THE VINES IN FRANCE.

I find upon investigation that remedies and treatment, like their instigating causes, are boundless. I shall therefore confine myself to such treatments as have in whole or part proved successful and are most generally practiced.

PHYLLOXERA.

This apparently invincible invader, tenaciously clinging as long as the vines show vitality, should be designated as king of vine diseases. In spite of the many inventions specially aimed at its destruction it continues its progress of destruction. Some few years ago the French Government offered a prize of 300,000 francs to the fortunate inventor of a remedy or means that would rid the vineyards of this plague. Men, and not a few women, from nearly every civilized country of the globe diligently and patiently exerted their best efforts towards obtaining this tempting prize. Among the many inventions several are from America; one of which, owing to the original and rational method of its application, has recently interested me very much. Mr. L. H. Davis, the inventor, claims that the most feasible way of destroying phylloxera is by attacking the insect indirectly through the sap of the vine upon which it exists. He therefore simply inoculates the vine with his preparation through a carefully made incision on the stock of the vine, which is immediately closed. The sap becomes thoroughly impregnated, the insect feeds, and unconsciously takes his death potion. Mr. Davis claims that his chemical composition not only destroys phylloxera but enriches the soil, owing to its valuable fertilizing qualities. The treatment has lately been applied to some vines near Marseilles and at Pauillac, France, but so recently that at this writing I can not speak of the results. Dr. Griffin has devoted several years' study to this interesting subject. He has invented an ingenious

discovered, and which he believes is the long sought for phylloxera annihilator. Last year he had one of the vineyards belonging to the French Government placed at his disposal for experimental trial. He operated upon the vines, and is gratified this spring to find the vines treated by his process vigorous and flourishing in the midst of others dying from the ravages of phylloxera.

Of the many remedies in vogue, the most generally employed are submersion (for a period of not less than forty days) in carbon of sulphur dissolved in water. Like all innovations this latter treatment was looked upon with great distrust. Fears were entertained that its employment would destroy the soil. The excellent work of Messrs. Gastine and Couanon made known its value, explained its direct and rational application, and its effects upon the vine and soil, so that to-day it is generally used in preference to all other treatment, and all fears regarding its use are dissipated. It is impossible to give the exact amount of carbon of sulphur necessary to a certain extent or number of vines, as the degree of strength varies according to the character of the land, *i. e.*, on light permeable soil a strong mixture is used, as the solution rapidly filters through; on stronger soil a weaker solution is applied, as it reaches the roots by slow degrees, thoroughly impregnating the soil in its progress. A remarkable evidence of the efficacy of this treatment is that it is also extremely effective in damp, low land.

LOSS SUSTAINED BY FRANCE IN CONSEQUENCE OF PHYLLOXERA.

It is a widely-known fact that in the past few years the vineyards of France have produced yields insufficient for home and foreign consumption; that French wine growers and dealers have depended largely upon importations of foreign wines and dried grapes to supply the deficiency. Few persons, however, have an idea of the exact loss sustained by France as a consequence of the ravages of phylloxera.

From official statistics, the surface of vines totally destroyed by this insupportable plague is placed at more than 1,000,000 hectares, with 664,511 hectares of diseased vines, which, estimated at most favorable average, are calculated as an additional 200,000 hectares of dead vines. The actual area of destroyed vines is 1,200,000 hectares, or about one-half of the vineyards of France.

As no radical cure or exterminator of phylloxera has yet been discovered, the future of French vineyards is not only gloomy, but is to-day almost an insolvable problem.

The relative value of the property destroyed is from a national point of view inestimable. To proprietors, and those dependent upon the wine industry as a means of livelihood, the destruction of the vines is incalculable, as the naked ground has but a minimum value, owing to its unsuitable con-

dition to grow other crops.

5. represents a money value

latter are difficult to estimate, but which may, to a certain extent, be determined by the amount of foreign wines and dried grapes annually imported into France for the sole purpose of supplying the deficit in the home yield.

Below is a tabulated statement of wines and dried grapes imported into France from 1875 to 1887, inclusive.

Years.	Ordinary wines. <i>Francs.</i>	Dried grapes. <i>Francs.</i>
1875	8,351,741	5,755,614
1876	18,408,811	5,447,204
1877	22,593,989	8,649,482
1878	50,204,145	14,829,096
1879	107,479,899	40,807,043
1880	297,917,248	62,631,970
1881	346,516,425	37,364,289
1882	295,207,947	31,903,088
1883	360,000,000	39,000,000
1884	319,664,326	49,644,909
1885	361,476,779	95,350,824
1886	489,985,194	88,422,465
1887	545,000,000	98,000,000
Total.....	3,222,806,504	577,805,984

It will be seen by the above that 3,800,612,488 francs have been expended for foreign wines and dried grapes, which, added to the 7,200,000,000 francs reckoned as values of vines totally destroyed, shows an approximate loss of more than 10,000,000,000 of francs as a consequence of the phylloxera, which has also been one of the principal causes of the stringency in agricultural, industrial, and commercial affairs during the past few years.

OIDIUM.

The application of sulphur, pure or mixed with other properties, is considered of greatest importance by the French viticulturist in combating the spread of oidium. Like phylloxera, no positive remedy has yet been discovered which entirely controls it. The use of sulphur in various forms has a restraining effect upon the disease, but at the same time aids fructification and vegetation of the vine. The benefits derived from the employment of sulphur are such that it will be used in the vineyards independent of the presence of oidium. It has an efficacious effect upon the vine; the wood becomes healthier, vegetation more vigorous, produces a greener tint, causes the leaves to remain longer upon the vines, and produces a more advanced and equal maturation.

From 1834 to 1854 the vintage was generally from the 10th to the 25th of September. In consequence of the present early maturity the vintage is usually from the 1st to the 15th of September. It is also a noted fact that the sulphur affects the coloring matter of the grape, which gives a richer and deeper color to the wine. The direct influence upon the seed of the grape appears difficult to explain. It is well known that sulphur

accentuating the color. To improve the color of red and black table fruits, a light sprinkling of sulphur is frequently employed at the moment of maturity. This has long been known to viticulturists, who accept the fact without being able to explain the cause. If, however, grapes for wine are sulphureted too late the wine is contaminated in taste and color. It is therefore advisable to apply the last sprinkling of sulphur at least a month before the vintage, as the grapes protect themselves from the oidium after veraison.

PERIOD OF SULPHURING.

The development of the oidium is slow. The first application of sulphur, distributed as a fine powder, should be made at the earliest possible moment, even before the parasite discloses itself. A second sulphuring is almost indispensable at the moment of budding. When vines are treated yearly, two applications of sulphur at the periods mentioned may be sufficient, but it is rare when a third application is not made. The periods of sulphuring vary according to the early or backward season. The first application should be made when the young branches are about 5 inches long; second, when the vines begin to blossom; third, a few days before maturity; fourth, such time between the above-mentioned period as may appear necessary to the vine grower. No special hour of the day is selected for this duty; only windy weather is to be avoided. Pure sulphur should be used in the two first applications; sulphur and lime mixed may be used on any subsequent occasion. The lime has a cooling influence and prevents too great heat upon the vines from the combined action of the sulphur and sun.

MILDEW.

Up to 1885 no satisfactory treatment had been discovered to operate against the spread of mildew. During the last two or three years salts of copper has been successfully employed, but there are doubts as to the effectual benefits of this remedy. An incontestable fact, however, remains, that no other remedy or substitute produces such satisfactory results.

As mentioned in a former report, the most generally accepted method of fighting this disease is by plucking from the vines all leaves bearing the faintest trace of mildew and immediately burning them. Leaves which may have fallen to the ground should be carefully gathered, as one diseased leaf can infect an entire vineyard. Several vine growers adopted the plan of letting sheep into the vineyards and feeding the diseased leaves to them. This is considered inadvisable, as the disease reappears in a more vigorous condition in the droppings of the sheep. The favorite and principal articles used to combat mildew is, first, salts of copper; second, bouillie bordelaise; third, eau célesté (celestial water); fourth, ammoniate of copper; fifth, verdigris and powdered sulphate of copper.

short branches, paring off and burning the soil, singeing the vine with kerosene, washing with a solution of concentrated sulphate of copper, and applications of bouillie bordelaise and eau célesté. The disease increases in spite of most assiduous care and treatment, but does not discourage the persevering French vine grower, who is ever alert and hopeful of arriving at a remedy that will vanquish this destructive evil.

ANTHRACNOSE.

If means are employed early in the spring, even before the vines begin to bud, this disease may in a measure be controlled, and its presence produce but inconsequential damage. The curative means employed on the vines in vegetation which have given the best results, are repeated applications of sulphur, lime, or, better still, mixtures of lime and sulphur, plaster and pulverized sulphate of iron. These attempts, though crowned with relative success in many vineyards, have not caused the total disappearance of the disease. The results, however, have been sufficiently encouraging to warrant the continued use of the above-mentioned means, combined with the preventive treatment of concentrated sulphate of iron or diluted acids. When vegetation of the vine begins, sulphuring is almost indispensable. It should be repeated two or three times, at intervals of eight days. In the first sulphurings only a moderate quantity should be applied, owing to the slight development of the young shoots. When the vine is in full vegetation, and when the anthracnose is very far advanced, the employment of sulphur not only becomes an almost useless operation, but an extremely expensive one. The application of sulphur is more efficacious when the condition of the atmosphere is dry. When the disease is in full development the use of sulphur alone must be renounced, but very finely pulverized lime is employed, which is distributed upon the vines by the same machine which is used in sprinkling sulphur. The application should be made in fine, dry weather, so that the wind can not diffuse the powder. The mixture of sulphur and lime produces more satisfactory results than lime alone, which is hurtful to the young shoots and buds. The treatment is applied as follows: The first sulphuring is given when the shoots are from 4 to 5 inches long. If lesions appear or develop, the operation is repeated in ten or fifteen days, using a strong mixture of lime and sulphur, the proportions being from one-fifth to three-fifths of lime. In 1886 many vine growers of the Medoc made two applications of sulphate of iron, the first early in February and the second a month later. These experiments demonstrated that this system is superior to that which consisted in only once washing the vines. The second application destroyed the egg that escaped under the first treatment. Eight quarts of liquid is sufficient to treat 100 feet of vines. The action of air produces oxidation of iron, which causes the surface of the stock to change to a brown or dirty yellow-brown color, which, however, in a short while, disappears without producing a harmful effect. Another simple preventive against the spread of the disease is, in planting vineyards care should be taken to

varieties. If the anthracnose appears only in old vineyards recourse may be had to grafting, as the disease is usually so advanced that other treatment is useless in arresting its progress. Damp land should be well drained, thus permitting the air to freely circulate through the otherwise choked vines. During the winter such branches showing lesions should be cut from the stock and burnt, as they envelop the germs of the disease.

POURRIDIE.

The fight by direct means against parasites subsisting upon the roots of the vine is always difficult. It is doubly so against the mushroom, which develops in the interior of the tissue and can not be destroyed without destroying the organs involved. Many remedies proposed against pourridie are not only extremely expensive, but the use of them renders the soil unproductive. The only really efficacious means of subduing this evil is by removing and burning all roots showing trace of the disease, as it is impracticable to treat vines already diseased. New vines should not be immediately planted in soil lately occupied by diseased plants, as the young vine will be at once attacked and destroyed. Vines susceptible to this disease should be planted in dry land, as it has been observed that the evil spreads with remarkable intensity in low, damp land.

ERINNOSE.

Like mildew, no more efficacious treatment is known to combat erinnose than repeated applications of sulphur, whitewashing the plants in winter to destroy acariens which lodge under the bark and at the base of the bud—in the spring trimming off new shoots when they reach the length of 4 or 5 inches.

I have embodied in as limited a space as possible the most generally employed means of combating such diseases of the vines as are most destructive. Toads are very valuable as insect-destroyers, as they are determined enemies of all kinds of snails and slugs, which, as is well known, can in a single night destroy a vast quantity of vegetation. They are almost indispensable in vineyards, where they devour during the night millions of insects that escape the pursuit of nocturnal birds, and might commit incalculable havoc on the buds and young shoots of the vine. In the markets of France toads are an article of merchandise. They are kept in tubs and sold at the rate of two francs a dozen.

The vineyards through the famous Medoc region, owing to a late but mild spring, unaccompanied by violent storms, are in a most promising condition. The vines are in full vegetation and the fruit gives promise of an abundant harvest. On June 6 a heavy hailstorm swept over a portion of the Dordogne and destroyed nearly half of what promised to be a famous

QUARANTINE REGULATIONS OF THE REPUBLIC OF COLOMBIA.

[Transmitted by Minister Walker.]

ARTICLE I. All vessels arriving at Colombian ports with infectious or contagious diseases on board, or with an unclean bill of health, shall be declared in quarantine.

ART. 2. For the purposes of the preceding article cholera, yellow fever, small-pox, and plague are to be considered contagious and infectious diseases.

ART. 3. In like manner a vessel is to be considered to have an unclean bill of health when it has cleared from or touched at any port, or received on board merchandise or passengers from the same, infected by any of the diseases mentioned in the preceding article.

ART. 4. No vessel can be placed in quarantine without a decision founded on cause. This decision shall be communicated without delay to the captain or person in charge of the vessel.

ART. 5. A vessel before or after being placed in quarantine may go to sea; but it shall be stated in her clearance papers the state in which she is found and the reason for her departure.

ART. 6. The duration of the quarantine shall be the same for the vessel, persons, and merchandise on board. There shall be a distinction between quarantine of observation and absolute quarantine.

ART. 7. For vessels, and whatever may be on board of them, a quarantine of observation shall be considered to have commenced the moment the agent of the authorities takes cognizance of the unclean bill of health, and adopts measures for their ventilation and purification. Absolute quarantine shall date—for the vessel, the crew, and the persons, and things on board, from the time the merchandise subject to disembarkation shall be landed; for the merchandise disembarked at the lazaretto, or the place selected for its purification, or for the persons disembarked—from the moment of their entrance into the lazaretto. A quarantine commenced on board may always be continued in the lazaretto.

ART. 8. The quarantine of observation shall be limited to observing, during a prescribed period, the ship, crew, and passengers, and does not require the disembarking of the merchandise at the lazaretto. Quarantined persons may remain on board the ship or at the lazaretto, as they may elect. While a vessel is in quarantine it shall be kept at a distance and watched by a guard of sufficient number, and will be subjected merely to sanitary measures, such as proper ventilation and washings necessary to cleanliness.

ART. 9. Quarantine of observation shall continue for eight complete days for cholera and ten for yellow fever.

ART. 10. Absolute quarantine shall add to the quarantine of observation the necessary special measures of purification and disinfection which may be judged necessary by the sanitary authorities. Besides the cases specified in these regulations said authorities may impose the disembarkation at the lazaretto of merchandise of the first class, and, according to local regulations, merchandise of the second class.

ART. 11. Whatever is in quarantine on account of the plague can only be purified at the lazaretto or place designated for that purpose. Whatever is imposed upon a ship for uncleanness may be purified in an isolated part of any port.

ART. 12. The necessary quarantine may be undergone at a port intermediate between the port of departure and the port of destination, and by producing proof of this quarantine the vessel will be admitted to free *pratique*.

ART. 13. The duration of the passage shall be reckoned for all vessels from the moment the departure is noted in the log-book, attested by the captain or person in charge of the vessel.

ART. 14. Every vessel, on board of which there was during its passage a case of a disease

ART. 15. If there has been one or more cases of contagious disease during the voyage or while in quarantine the commencement of sanitary measures shall be reckoned from the moment of its arrival or the beginning of sanitary measures, without taking into account the duration of the voyage.

ART. 16. Hides, horse-hair, cotton, linen goods, or canvas in a bad condition must always be disinfected, even on a vessel with a clean bill of health. The authorities shall be judges of these measures, and shall determine its nature and duration.

ART. 17. The authorities shall have the right to order them destroyed by fire or thrown into the sea. The steps to be taken in such cases shall be determined by local regulations.

ART. 18. Merchandise coming in a vessel with an unclean bill of health shall be divided into three classes. The first class, which shall be subjected to an obligatory quarantine and measures of purification, shall consist of luggage and articles in use, canvas, drills, cotton and linen goods, hides, skins, feathers, horse-hair, animal remains in general, and materials of woolen and silk. The second class shall embrace cotton, linen, and hemp, and shall be subject to such quarantine as may be ordered. The third class, consisting of articles not embraced in the other classes, shall therefore be exempted from quarantine measures.

ART. 19. With an unclean bill of health on account of disease, merchandise of the first and second classes shall be disembarked always at the lazaretto and submitted to purification. Merchandise of the third class, being declared free, may be immediately liberated under the supervision of the sanitary authorities.

ART. 20. Merchandise on a vessel with an unclean bill of health, on account of yellow fever, without there having occurred any case on board on a voyage of more than ten days, shall be submitted to the hygiene measures of a simple ventilation before unloading. If there has been any case on board, or if the voyage has been of less duration than ten days, the merchandise may be the object of the same measures as merchandise on board a vessel with an unclean bill of health, for reason of disease; that is to say, it must be disembarked at the lazaretto and purified, but these measures will be optional and left to the discretion of the sanitary authorities.

ART. 21. In case of unclean bills of health, on account of the existence of cholera, merchandise shall be disinfected by the use of moist steam at a high pressure, if stoves are employed; if not, then in the manner prescribed for unclean bills of health in consequence of the plague.

ART. 22. In all cases of unclean bills of health, letters and papers shall be submitted to the purification in use, provided there are not stoves on board for their purification, by the use of moist steam at a high pressure, in which case they may be passed immediately.

ART. 23. All merchandise, or objects of whatsoever nature, coming from a healthy port contained in an official envelope, sealed in such a manner that they can not be subjected to purification, shall be admitted to free *pratique* immediately, whatever may be the ship's bill of health. If the envelope be of a substance with respect to which sanitary measures are optional, their admission shall also be optional.

ART. 24. Live animals shall be subject to quarantine and purification at the different ports.

ART. 25. All vessels without bills of health, when properly they should have had such from the place of departure, may be placed in absolute quarantine or quarantine of observation, according to the circumstances. The duration of this quarantine shall be fixed by the sanitary authorities, but it shall not exceed three days, provided the vessel comes from a place notoriously healthy and is in a good hygienic condition. Cases of superior force or the accidental loss of the bill of health shall be taken into consideration by the sanitary au-

ART. 27. If, during the period of quarantine, no matter from what place the vessel may have come, any case of contagious disease occurs the quarantine shall recommence.

ART. 28. In addition to the preceding quarantines and the specified measures, the sanitary authorities of all ports shall have the right, in the presence of immediate danger and without warning, to prescribe, upon their own responsibility, such measures as they may judge necessary to preserve public health. In absence of special establishments on land, vessels may be used as lazarettos, the same to be anchored and guarded in such manner as to prevent all communication with the outside.

REGULATIONS AND ARRANGEMENT OF LAZARETTOS.

ART. 29. The interior arrangement of the lazarettos will be such that persons and their belongings, goods, etc., of each quarantine, according to date, may be easily divided.

ART. 30. Large and spacious saloons shall be kept ready to receive persons visiting the quarantine, but every precaution necessary to preserve public health must be taken. Small lattice windows and everything that may have a damaging moral influence on persons under quarantine will be suppressed.

ART. 31. Buildings, or parts of buildings, will be arranged in each lazaretto and set apart for the use of the sick. They will be so arranged that the sick may be separated as required, so as to insure the best hygienic conditions, especially as regards ventilation.

ART. 32. Close communication with persons or things in quarantine, suspects, or reputed suspicions is prohibited. Besides the punishment laid down by law or regulations, persons who may have been in close communication with people or things in quarantine will be declared under quarantine, and treated as such. Exceptions to this rule will be made by the sanitary authorities, who are the sole judges in such cases.

ART. 33. Every lazaretto shall have a supply of wholesome fresh water in sufficient quantities for the necessities of the service. In lazarettos, and in their neighborhood, there will be proper places set apart as cemeteries.

ART. 34. The ports and other places destined for the quarantine of vessels, the lazarettos for passengers and merchandise, and in general everything undergoing the quarantine will be placed under the immediate control of the sanitary authorities.

ART. 35. In each lazaretto there shall be a director, or responsible agent, and a sufficient number of employés and guards to carry out the prescribed measures.

ART. 36. In each lazaretto there shall be a doctor to visit and care for those undergoing quarantine and to advise in the strict observance and execution of the prescribed sanitary measures.

ART. 37. The sick will receive in the lazaretto all the religious and medical services and care that are given in the best regulated hospitals, except that doctors and others giving such help may not be liable to quarantine.

ART. 38. Each patient may be attended by a doctor chosen by himself, although he may not belong to the lazaretto, but in this case his visits must take place in the presence of and under the supervision of the manager of the lazaretto. The authorities will, however, send the official doctor from time to time to visit the patient, to know the nature of the disease.

ART. 39. Paupers received as such by the sanitary authorities will not only be admitted but gratuitously fed and properly treated in the lazarettos.

ART. 40. Each lazaretto will have a tariff regulated by the authorities and revised every quarter, in which the prices of food will be arranged in accordance with the lowest prices.

ART. 41. Furniture and other strictly necessary articles for the use of the patients shall be gratuitously supplied by the authorities immediately after their entrance into the lazaretto.

ART. 42. The sanitary visits of the doctor shall be gratuitous. Those undergoing quarantine will be required to pay only for services foreign to the sanitary regulations.

ART. 43. Besides the general rules, the sanitary authorities, always watching over the public health, will take every precaution, by special regulations.

TREATMENT OF MERCHANDISE, ARTICLES IN USE, AND CORRESPONDENCE IN LAZARETTOS.

ART. 44. Merchandise will be deposited in special and dry store-houses. They will be well ventilated and shaken from time to time. Bales and cases shall be opened so that the goods may be well aired. This ventilation will be continued during the whole period specified as quarantine.

ART. 45. Merchandise belonging to different quarantines shall be separated, one from the other, and will be placed, if possible, in different store-houses.

ART. 46. Hides, skins, horse-hair, canvas, cotton and linen goods, animal matter, and woolen and silk goods will be deposited in places far away from those places occupied by persons under quarantine, as well as from the employés.

In cases of notorious infection, of uncleanness, or deterioration, any of the above-mentioned effects or merchandise may be submitted to any process of purification judged necessary by the sanitary authorities.

ART. 47. Animal and vegetable matter in a state of putrefaction shall never be received in lazarettos; they shall be burned or thrown into the sea, in accordance with these regulations.

ART. 48. In each lazaretto there shall be a store-house for disinfected goods.

ART. 49. Passengers' baggage and effects shall be aired during quarantine in well-ventilated rooms set apart for this purpose and under the supervision of the guard of the lazaretto. The sanitary authorities shall take care that this shall not be neglected under any circumstances.

ART. 50. The personal effects, clothes, and all that may have been in use by deceased persons or by those suffering from the plague shall be submitted to a stronger purification—to chloride fumigations, to immersions in sea water, to the action of heat or sulphurous vapors—according to the circumstances and the nature of the articles. The same shall take place in every other contagious disease.

ART. 51. Letters and dispatches shall be purified in such manner that the writing shall not be altered.

ART. 52. This operation shall be performed in the presence of the director of the lazaretto.

ART. 53. Consuls or the representatives of foreign nations have the right to be present at the opening of letters and dispatches addressed to them or their countrymen. The postal authorities shall have the same privilege.

ART. 54. The measures for disinfection and purification alluded to in this law may be modified in accordance with the progress of science.

THE SANATORY AUTHORITIES.

ART. 55. These will consist, first, of a responsible agent of the Government, and, second, of a local sanitary council.

ART. 56. The agent essentially represents the central governmental power. He will be selected, as far as possible, from the medical corps, and will be styled "director of health."

ART. 57. The director or agent will be chief of the active service, and will bear all the responsibility. All employés will be under his orders. He shall watch over the execution of the sanitary laws; he shall survey, and order the survey of all arriving vessels; will grant clean bills of health to those leaving, and shall have the supervision and direction of the lazarettos and ports under quarantine.

ART. 58. The sanitary council shall especially represent the local interests, and will be made up of several administrative and scientific members, to watch, in each port, for the maintenance of public health.

ART. 59. The director or agent, in virtue of his office, will be a part of the council.

He shall have a general supervision of the health service. Its special measures to be

regulations touching the sanitary police, and when necessary to inform the Government of all infractions or omissions of these laws. It shall be consulted on all administrative and medical matters, and shall join the director in making local or interior regulations.

ART. 61. The council will meet periodically, at such time as may be fixed by the superior authorities, and will have extraordinary meetings whenever public health may require them.

ART. 62. It shall be the duty of the director or agent and of the council to be constantly kept informed regarding public health. To this end they will keep constant correspondence by delegates with the municipal administration, and will receive from them all the necessary communications to enable them to comply with their duty.

ART. 63. When the director and the council may not agree, the matter shall be referred directly to the government of the department; but in urgent cases the director, upon his own responsibility, will decree the provisional dispositions required by the public health or the service.

Given at Bogota, this 21st day of May, 1888.

C. MICHELSEN U.,

President of the Central Board of Health.

Approved for His Excellency the President of the Republic:

RAFAEL REYS,

Minister of Public Works.

THE SANITARY CONDITION OF CALCUTTA.

During the past year or more the subject of proper sanitation in Calcutta has been agitated by the municipal authorities and the public press to an extent that has awakened an unusual interest in the subject, and it has occurred to me that a few observations relative thereto might be of some public interest.

The municipality of Calcutta proper has a population of 433,219, and including the numerous suburbs the number reaches about 700,000. Of this population there are 13,806 Europeans, 9,658 Eurasians, and between 30 and 40 Americans, consisting of three mercantile firms, and the remainder principally missionaries.

The poor class of natives, like the same class of Chinamen, live, especially in the cities, in crowded and illy-ventilated tenement houses, located generally upon very narrow, crooked lanes, without, as a rule, any system of sewerage or drainage which is entitled to be dignified with the name of that essential sanitary appliance. Before leaving my home in Oregon for Calcutta I took occasion to read up as much as I could about the sanitary condition of this city, not having a very favorable opinion of the same from previous information obtained.

I recollect reading a very misleading article on the subject which I found in the *Cyclopedia Britannica*, which gives a very flattering account of the improved sanitary condition of this city and of its healthfulness as compared with former times and as compared with many European cities of the present day. There is some truth in the statements, but they are only partially correct. In the European residential quarters and in a small part of the business portion of the city as fairly good sanitary arrangements have been provided as the low and flat character of the country will allow. And where such

It is also an encouraging fact, attested by the medical faculty of Calcutta and generally sanctioned by old residents here, that, as a rule, the Asiatic cholera (which seems to have a permanent abiding place in this city) does not extend in a very malignant form much beyond those localities which by their deplorable unsanitary conditions seem to invite its presence. I have been told by some of the most eminent physicians of Calcutta that they are generally able to trace the presence of cholera to local unsanitary conditions, the same as they would expect to trace typhoid or malarial fevers. And yet, to those who are most favorably located in a sanitary point of view, it is not very assuring to contemplate the fact that they are surrounded on all sides by a cordon of cesspools, which, to all appearances, must sooner or later breed a widespread pestilence. I refer particularly to the system of stagnant tanks (artificial ponds), many of which, under our tropical sun, are so completely covered with green slime that the reeking, filthy water which they contain is entirely hidden from view. In these tanks the poor native bathes, and often washes his clothing, and from them procures water for drinking and culinary purposes. The only wonder to me is that the death rate of these poor, misguided people is as low as it is. I say misguided people, because the majority of the native element in and out of the municipal council seem to be opposed, either on account of the expense involved or from their proverbial aversion to a change of conditions which have been long established, to any efficient and radical sanitary reform.

A severe outbreak of cholera in a British ship was traced last year by the intelligent and energetic health officer of Calcutta to milk which had been furnished said ship by a native vendor who *watered* the same from one of these poisoned tanks. When, by the rigid hand of municipal authority, these pestilence-breeding tanks are filled up and the entire population is furnished with good hydrant water—a limited and insufficient quantity of which is now supplied from the Hooghly River—and these steps are supplemented by further necessary and available sanitary requirements, we may expect Calcutta to become a fairly healthy city.

I feel safely warranted in saying that it would not be advisable for any person from the United States who is not possessed with ample means, or has not beforehand a reliable guarantee of remunerative employment, to come here with the hope of bettering his condition financially. I have seen enough of my unfortunate countrymen who have come to grief in India to feel it obligatory upon me to give this warning. —CALCUTTA, *June 2, 1888.*

B. F. BONHAM,
Consul-General.

SANITATION IN INDIA.

Mr. Justice Cunningham's lecture, at the Parkes Museum, has a special interest for Calcutta. In the course of his address he referred to the anxiety expressed by Sir Lyon Playfair, "the interests of sanitation should be endangered

epidemics and preventable disease and mortality, which at present showed symptoms of increase rather than decline, and the practical question was whether the Government should make any series attempt to mitigate this evil or should abandon the attempt as impracticable. Such an abandonment would be the virtual surrender of one of the great functions of a civilized Government in promoting the well-being of its subjects, and would be inconsistent with the strenuous efforts made by the Government in other directions to counteract the great destructive agencies of invasion and famine to which the Government has devoted millions. The results of these agencies, however, were altogether insignificant as compared with the continuous effects of insanitation. The duties of the state were as imperative in the one case as in the other. Owing to the science of preventive medicine being a new one, and the officials having no training in cognate branches of science, there was a tendency to underrate its importance as compared with other branches of administrative work.

The objects of the Health Society of Calcutta, a society headed by all the principal physicians and men of science in that city, was to impress its importance on the public mind, and to secure its enlightened and systematic treatment. Criticism of such an order was no disparagement to the general excellence of the administration, which was a topic of legitimate pride and satisfaction to every Englishman. The views of the sanitary parties in India might be summarized in the following proportions: That the mortality of the population is vastly in excess of that of civilized countries, and in particular can not be calculated at less than 10 to 15 per thousand in excess of the English rates, an excess making at least 2,500,000 of deaths and 50,000,000 cases of severe diseases; that this excess, or a large portion of it, is preventable by practical means fairly within human competence; that the existing administrative machinery is powerless to make any impression on this excessive mortality, but that its tendency is rather to intensify it; that there are reforms which materially affect it which might be adopted without grievance to the people or detriment to the Government finances, and that it is the duty of the Government to adopt such reforms. As to the excessive mortality, the lecturer pointed out that wherever registration approached completeness there were high ratios of 30 per thousand and more, the central provinces ratio being 34 and the northwestern provinces 32; that many large areas with populations of a million and upwards showed ratios of 40 and 50 per thousand, and many towns and municipalities showed ratios of 40, 60, 70, 80, and even higher. Such ratios showed that the laws of health were being contravened on an enormous scale. A curious instance of the extreme prevalence of disease was shown in Calcutta, where, out of a population of 445,000 persons, no less than 325,000 were treated annually in public medical institutions. Coming next to preventability, experience proved that wherever effective sanitation was carried out the ratios of Indian mortality sunk at once to that of England.

The great mass of Indian mortality was occasioned by epidemic diseases, which are preventable or mitigable, and in England have either disappeared or sunk to insignificant proportions. The army sanitary commission gave what they call a "deplorable record" of 38,000,000 of victims within a single decade to such diseases. Coming to particular instances, the extraordinary reduction in the mortality of the European army from 69 per thousand to 12 or 14, and the invaliding ratio from 43 to 23, the cholera mortality from 9.24 to 1.17, showed what sanitation could do in the case of men newly exposed to a tropical climate. The reduction of the mortality in jails was equally remarkable. It is now about one-third of the former rate. In Madras the extraordinarily low ratio of 17.80 per thousand had been attained. The high ratio of over 100 per thousand in some Bengal jails pointed to active insanitary conditions of soil, structure, or mismanagement. Another striking instance is that afforded by those parts of Calcutta which have been properly sanitated, which would compare favorably with the best parts of London for healthiness, while the insanitary wards of the city are scourged with epidemics—are the perennial home of cholera—and the suburbs of Calcutta have long been a scandal, not only to the Bengal Government, but to English civilization.

As to the third point, there were, the lecturer admitted, financial difficulties, but considerable as was the pressure on the Imperial exchequer.

expenditure, which would insure immense improvements. The country was yearly increasing in wealth, as shown by the automatic growth of revenue. In any case insanitation was far from economical; disease is costly. Sir James Paget reckoned that it cost the English population between the ages of fifteen and sixty-five no less than twenty million weeks of work, valued, for the working classes, at £11,000,000, and for the professional and mercantile classes at a sum which defied calculation. In Calcutta it had been reckoned that the preventable disease and mortality cost the population an annual sum which might be capitalized at £750,000, or about three times the whole municipal revenue; and for India at large this loss could not be reckoned at less than £80,000,000, the whole revenue being only £76,000,000. As regards the general population, however, the army sanitary commission observed that in cholera, fever, and small-pox there was a marked tendency to augmentation. This tendency was in the case of the army in fever, and still more in contagious diseases, the admissive ratio for which had increased from 20.3 per thousand in 1879 to 34.3 per thousand in 1885. This state of things must be traced to the absence of control and guidance at headquarters. In India there was a fairly good observing and statistical department, but no central executive authority.

The royal commission had recommended provincial sanitary committees, but the experiment had been speedily abandoned. The absence of such a body was injurious alike to the Government and the general population. One instance of this was the enormous mortality occasioned in some districts by the introduction of canal irrigation without the necessary drainage. The admission rate of European troops at Delhi was 4.155 per thousand, and the death rate 25 per thousand, owing to the neglect to provide pure water. The reforms advocated by the health society are—(1) a central executive authority with the necessary expert element to control and assist municipal bodies as recommended twenty-eight years ago by the royal commission. (2) Increased provision for scientific research into the causes of disease. (3) A recurrence to the system in force in 187— of Government lending to municipalities, and the creation for this purpose of a Government local works stock. (4) More general instruction in sanitation, and the introduction of sanitation into the educational curriculum of civilian officers. (5) The creation of a committee in England who should effectively supervise Indian sanitation, keeping touch both with public bodies in India and with the various sanitary authorities in England, and thus competent to advise authoratively on matters of principle. In conclusion the lecturer pointed out that over-population in India was not a mere charge as there were still 79,000,000 acres of cultivable land not utilized, and the rate of produce might be increased so as to provide for an additional population of 400,000,000. The proper check on a possibly redundant population was not to allow it to be devastated by preventable disease, but to raise the general standard of comfort and encourage prudential habits which would delay premature marriage and check the growth of numbers beyond available means of sustenance.

TEA CULTURE IN NATAL.

A peculiar and fatal blight attacked the coffee-trees in Natal a few years ago, which induced some of the coffee planters to abandon that pursuit and to undertake the cultivation of the tea-plant instead. This experiment began in 1877-'78, during which a few acres were planted with Ceylon and other varieties of Indian tea seed. The result proved so encouraging that the area of tea cultivation was rapidly enlarged. Mr. J. L. Hulett, M. L. C., the originator and father of the new industry, being so well satisfied with the prospects foreshadowed by his first efforts, determined to devote his

Mr. Hulett has established a plant on his estate for the preparation and manufacture of the tea, which, being operated on the central factory system, is used by the neighboring planters. About \$5,000 has so far been expended for machinery, consisting of Greig's link and screw rolling machines, Davidson's sirocco, a hot-air blast drying machine, sorting machines, etc.

The ground under tea culture is situated 1,000 feet above sea level, possessing a deep soil with a fair proportion of sand and decomposed granite, vegetable, and other organic matter. The land selected is generally open and level, and is well plowed. The rows are then laid out about 5 feet apart, and the plants are placed therein 4 feet 6 inches apart. If the planting is successful a small crop may be obtained after the first year, which will increase in quantity from year to year until the maturity of the plant, which is attained the sixth year, and after which it will continue to yield for an indefinite period, according to the care bestowed upon it. During the whole period of growth the greatest care is used to keep the ground loose and clear of grass and weeds.

Picking commences in September, that is after the dry season has passed, and is continued every ten days or three weeks till June, according to the season. A good season will yield from 20 to 22 pickings, or "flushes," as it is called, and a poor one only 17 or 18. The picking is performed almost entirely by Hindoo Indians or Coolies, of which the colony of Natal contains about 30,000. It is declared by Mr. Hulett and other tea planters of Natal that without this Hindoo labor, and to be dependent upon native labor alone, it could never be hoped to make this new industry a success. The reason assigned for this is that the Kaffir is so erratic and unstable in his habits and disposition, and so frequently engrossed in the affairs of his own domestic relations, that he can never be relied upon to keep his engagements for the morrow; whereas the Hindoo immigrant is patient and industrious, rarely showing an inclination to wander beyond the field of his labors, is tractable, docile, and never discontented, and may always be depended upon during the busiest as well as the slackest season. A Hindoo will pick from 35 to 40 pounds of green tea leaves per day, while a native will gather not exceeding one-half that quantity.

The several processes through which the green tea leaf passes in its preparation for market and use consist of (1) withering, (2) rolling, (3) fermenting, (4) drying, (5) sorting, and (6) packing.

1. The object of withering is to allow the leaf to roll or curl easily, and to prevent its breaking up during the rolling and drying processes. The leaf is first laid upon the withering floor, and then spread out in thin layers, and constantly turned and stirred about by Indian boys and girls. This operation is most expeditiously and satisfactorily performed when the temperature is hot and dry.

2. Rolling is the next stage, the object of which is to break up the juice cells of the withered leaf, and thus allow of fermentation taking place. This operation is performed by a machine

which it takes the place) rolling together. This is a great labor-saving apparatus, performing the work of eighty pairs of hands in one day. After having been sufficiently rolled, the leaves, in a sticky condition, fall from this machine into large trays, and are carried to the fermenting tables.

3. Now comes the most important and critical stage of all manipulations; the quality of the tea greatly depends upon the fermentation being arrested at the proper time, and it is necessary to have drying machinery capable of receiving rapidly all the tea as fast as it is sufficiently fermented. If over fermented the tea is depreciated both in color and quality. It is preferable to have the tea under rather than over fermented.

4. From the fermenting tables the tea is passed through the dryer, which consists of a long cylinder or tube, 2 feet in diameter, with a flue in the center which can be raised or depressed. This cylinder revolves at a rapid rate, keeping the tea in constant motion, thus preventing it from burning, which would otherwise occur, as the heat is very intense. The tea is driven through the heated air of the cylinder by a fan, and the leaf as it dries becomes rounded and gravitating to the lower end of the machine is collected in trays, and now, for the first time, presents the appearance of tea as we are accustomed to see it.

5. Sorting consists of passing the dried leaves through a series of graduated sieves, which, being kept in motion by an eccentric action, sifts and divides the tea into the various grades. The top sieve having the largest meshes, that which remains in it after the vibratory sifting is the coarsest, and is called "Souchang," and is the lowest grade. What remains in the second sieve is called "Pekoe Souchang"; in the third, "Pekoe," and in the fourth, "Flowery Pekoe."

6. The packing process is very simple though important. The tea is first weighed in single pounds, covered with tea lead, and labeled according to the quality of the tea. It is then placed in boxes lined with tea lead, of from 5 to 50 pounds weight, to suit the requirements of the trade. The expense of these packing-boxes, which otherwise would be considerable, is reduced to a minimum in consequence of a suitable wood for the purpose growing in large quantities immediately contiguous to the tea estates. No attempt has been made to introduce Natal teas into foreign markets. Indeed no necessity has existed for so doing, as the demand at home thus far has been fully equal to the entire production. Mr. Hulett assures me that he can dispose of his entire crops in the Durban market at prices 25 per cent. cheaper, quality for quality, than the foreign article can be laid down there for, and at the same time realize a splendid profit on his labor and outlay. On his estate, Kearsney, this year he will make between 80,000 and 90,000 pounds of tea, all of which has been already disposed of at prices ranging from 20 to 38 cents per pound, according to quality. Indications now point to the countries of the

THE AMSTERDAM DIAMOND-CUTTING TRADE.

Her British Majesty's Consul Robinson, in a report to the foreign office, writes: "The trade was in a decidedly unhealthy state throughout the year. Prices of cut diamonds were disproportionately low as compared with those of the raw material, and, in several cases, stocks of cut goods had to be cleared off at a very great sacrifice. The speculation in South African diamond shares has possessed itself of our diamond market, and there is more gambling in these than legitimate trade in the diamonds themselves. There has been a large increase in the number of mills, simply as a speculation, in order to let them to the cutters. In consequence of this, the rents paid by the cutters have fallen considerably. On the whole, there was fairly sufficient work for the greatly increased body of workers; with the exception of the less skilled class, wages remained on about the same level as in 1886."

EGYPT'S TOBACCO SUPPLY.

Owing to a report made by me to the Department of State regarding the imposition of a tax on tobacco production in Egypt, which has been widely published in the press of the United States, I have been the recipient of many letters from tobacco men in Virginia, Kentucky, North Carolina, Missouri, Illinois, and other States, soliciting information of a character illustrative of Egyptian tobacco trade.

The report above referred to was written in view of the promulgation of a Khedivial decree imposing a tax of £ E. 30 per feddan, equal to \$157.50 per acre, on tobacco cultivation throughout Egypt. This tax being virtually prohibitory, and the annual crop of Egypt being 6,500,000 pounds, while the consumption reaches 13,000,000 pounds, I thought I saw an opening for the sale of American tobacco to Egyptians, and it was with this object that I made known the decree and presented probabilities bearing upon its execution. When the decree was promulgated some tobacco had already been planted, and upon appeal the tax upon this was reduced to £ E. 10 per feddan. Even with this reduction a great portion of the planted tobacco was destroyed by the cultivators, while some was left to mature. This will leave a small unestimated home production for 1888, which will soon be exhausted; therefore the increased foreign demand must begin by or before next September. For the introduction of foreign-made cigars the Egyptian Government, through an arrangement made since the promulgation of the decree taxing the production of tobacco, has granted a monopoly, to last for a term of three years. Conventional rights allow this concession of monopoly, which might, indeed, be extended to the importation of all tobacco. The following table shows the principal imports of tobacco and cigars into Egypt, and the countries exporting the same.

TOBACCO.

Country.	Tobacco.			Cigars.		
	1885.	1886.	1887.	1885.	1886.	1887.
	<i>Kilograms.</i>	<i>Kilograms.</i>	<i>Kilograms.</i>	<i>Kilograms.</i>	<i>Kilograms.</i>	<i>Kilograms.</i>
England.....	756,502	439,271	190,470	3,509	5,429	3,025
English Mediterranean pos- sessions.....	216,586	454,684	147,207	59,080	56,717	38,013
Turkey, including Syria.....	711,683	539,143	1,146,670	955	159	569
Greece	1,012,961	1,100,588	969,255	324	363	.....
France	7,291	9,185	20,769	25,702	17,734	13,577
Italy	41,273	50,607	9,366	5,545	5,110	1,388
Other countries	40,267	15,481	3,461	11,972	15,905	14,252
Total.....	2,786,563	2,608,959	2,487,198	107,087	101,417	70,824

It will be seen that England sends quite a quantity of tobacco to Egypt. It comes not only from English Mediterranean possessions, but from Liverpool and London, and I am told that much of the tobacco thus imported into Egypt is really produced in the United States—surely, tobacco shipped from England eastward could be drawn largely from no other source. I have seen this “English tobacco” selling here in plugs manufactured in the United States; also, the American prepared smoking tobaccos. The English Mediterranean and French cigars sold in Egypt are, it is said, largely composed of American tobacco; but the main demand for foreign tobaccos is for the manufacture of cigarettes, which are not only largely consumed in Egypt, but are exported to all parts of the world. Egyptian tobacco has been consumed almost altogether by the common natives for smoking. It has been the cheapest tobacco in market, the Grecian coming next. The last-named is prepared in imitation of Turkish tobacco, and is packed in sacks like it. It is said some Turkish is mixed with it to give it the more popular flavor, yet its use is indignantly disclaimed by the makers of high-class cigarettes.

Turkish tobaccos, including Syrian, have a wide range in quality and prices. They are almost altogether light. Some of them, however, are dark, being made so by smoking in the curing process. The packing of all tobaccos sold here is in sacks, each package weighing from 125 to 175 pounds. Much of the tobacco is covered by an internal casing of cheap skins or by paper prepared for the purpose.

I have consulted with many tobacco merchants and cigarette manufacturers regarding the importation of American tobacco. The invariable answer is that they can make no promises as to its use unless supplied with reliable samples. I was shown some samples received a few days ago from the United States, and they were all pronounced too coarse and decidedly too strong. I am satisfied the light mild leaves of North Carolina, and similar products of the Egyptian demand. There was

I forward to the Department a number of specimens of tobaccos used in Egypt. Samples 1, 2, and 3 are Syrian. The long leaves, "Korani," are used for very superior cigarettes; and 1, 2, and 3 are also used for different grade cigarettes. The dark Turkish is a high grade and a favorite with many of Turkish tastes. The specimens of Grecian present larger leaves than the Turkish or Syrian. Out of it the common cigarettes are made, and now much of it will be used by the common people for smoking.

I have delayed making this report because a proposition to advance the duty on tobacco has been pending for some time, and I awaited its conclusion. A new decree has now been promulgated, and the import tax on all tobaccos, excepting Grecian, is $12\frac{1}{2}$ piasters per oke, or $5\frac{1}{4}$ piasters per kilogram. Grecian tobacco pays an import tax of $14\frac{1}{2}$ piasters per kilogram, and its present value, duty paid, is from 20 to 27 piasters. Egyptian tobacco is worth from 11 to 13 piasters, and Turkish and Syrian sells for from 25 to 65 piasters per kilogram.

Freight rates can be most reliably obtained from New York ship agencies. By sail, I presume, they would not exceed \$5 per ton. I have known rags to be shipped from Alexandria to New York, cargo rates, at 15 shillings per ton.

The only standard exchange is sterling. Exchange on the United States is uncommon and very high.

The Egyptian pound (expressed "£ E. 1") is the equivalent of \$4.9641. One pound is composed of 100 piasters.—CAIRO, EGYPT, *June 12, 1888.*

JOHN CARDWELL,
U. S. Agent and Consul-General.

RESOURCES OF ACAPULCO.

In my annual report I stated that the cotton crop of last year was estimated at 16,000 bales, 160 pounds to the bale, which was not a full crop, but that the crop of this year would be, with a favorable season, larger, and reach, perhaps, 25,000 bales. I regret to state that this anticipation was not realized. Unfavorable weather and a visitation of caterpillars cut the crop short, and it is not larger than that of last year.

Cotton is worth here 13 cents a pound, Mexican money. About 5,000 bales of this crop has been sent to Mazatlan and other points on the coast; the remainder was sent on mules to manufactories in the interior. The expense attending this mode of transportation renders it an unprofitable crop even at best, while, if there is an abundant yield, there are so few manufactories in the state that it can not find a market.

COTTON MILLS.

There is a small cotton factory at Atoyac, 90 miles north of Acapulco, and two other factories, of 100 looms each.

enterprises is evident, and, it is to be anticipated, they will lead to the establishment of other factories of greater extent. It is to be noted that the machinery for these mills, and, in fact, nearly all the machinery that reaches this coast, is brought from Europe. This is to be attributed, perhaps, to the fact that the men engaged in business here are all Europeans; and secondly, American manufacturers are not giving the trade of this section the attention its importance demands.

MINES.

Mining has not been prosecuted in this state to the extent that could reasonably have been anticipated. That gold and silver are to be found in paying quantities in the hills and mountains of Guerrero is universally conceded; but, strange to say, there has been no concerted effort to find these hidden treasures. The Guadaloupe silver mine is the most valuable mine that has yet been worked. In March last there were exported from it to Europe 90 tons of ore, the estimated value of which was £3,600. There are, no doubt, many valuable silver mines in the interior. All the outward evidences of rich deposits exist, not only of silver but of gold.

STEAM-SHIP LINES.

The Pacific Mail Steam-ship Company has the monopoly of the travel and carrying trade of this coast. The other lines in existence at the date of my last annual report have given way and left this company without a competitor. The Mexican International, it is true, has one steamer in the trade, but it has no schedule time for trips, and thus far has made but one voyage. The Pacific Mail (on the 30th of June) has changed back to its old schedule from tri-monthly to semi-monthly trips.

THE RAILROAD TO MEXICO.

Assurances are given here that the contemplated railroad from the City of Mexico to Acapulco has been undertaken by an English company, with ample means to complete it at an early day. Should this report prove true, Acapulco and this section will be brought into prominence. The harbor here is, beyond question, the most valuable on the Pacific Ocean. With a railroad outlet (connecting with the general railroad system of Mexico and the United States), Acapulco is destined to become, ultimately, an important maritime and commercial port. In this connection it is worthy of remark that the entire coast, from the Arizona line to the extreme limit of Mexico, presents a fruitful field for American enterprise; but no portion of it is more important than Acapulco, should the projected enterprises now in contemplation be carried out. Here are to be found the varied fruits and agricultural products of the tropics; a country rich in mines and valuable ~~woods~~ inviting not only a more extended commerce, but settlement and

RAILWAYS IN CEYLON.

There are $182\frac{1}{2}$ miles of railway in operation in Ceylon, and all are of 5-foot 6-inch gauge, viz: Colombo to Kandy, $74\frac{1}{2}$ miles; Peradeniya to Nanuoya, $58\frac{1}{2}$ miles; Colombo to Kalutara, $27\frac{3}{4}$ miles; Wharf and Breakwater branch, $4\frac{1}{4}$ miles; Peradeniya to Matale, $17\frac{1}{2}$ miles; total, $182\frac{1}{2}$ miles.

The line from Colombo to Kandy was opened for through traffic in 1867, and the Peradeniya and Nanuoya line in the following years, viz, to Gampola in 1873, to Nawalapitiya in 1874, to Talawakele in 1884, and to Nanuoya in 1885.

The line from Kandy to Matale was opened for traffic in 1880. All the railways except the Colombo to Kalutara and the Wharf and Breakwater lines (32 miles) penetrate the central province, which contains a moiety of the estates owned by European planters, whose interests they most directly subserve. They are owned and worked by the Government, and were built by capital borrowed in England, as also were all the other lines above enumerated. The cost of the up-country lines was 220,457 rupees per mile, which, considering that half of the money was expended when the currency was 10 rupees to the pound sterling and the remainder at 1s. 9d. per rupee, may be calculated at 45 cents per rupee; giving a total in United States money of \$99,206 per mile. This includes every item of cost, from permanent way to work-shops, rolling stock, stations, etc. All are single lines, and the sleepers, mostly of Norway pine creosoted, are completely buried, so as to protect them from the sun and rain.

PRINCIPAL ENGINEERING FEATURES.

The formation width is 20 feet, though the rock cuttings are reduced to 18 feet; weight of rails, 72 pounds per yard; gauge, 5 feet 6 inches; sleepers, 9 feet 9 inches long and 10 x 5 inches square, and 3 feet apart, except on inclines, where two are added for every length of rail.

The length of the Kaduganawa incline, between Rambukana and Kandy, is 12 miles, and the gradient 1 in 45, with 10-chain curves. There are ten tunnels, the longest being 365 yards. The steepest gradients are between Nawalapitiya and Nanuoya, where, in some instances, they are 1 in 44, the sharpest curves being 5 chains. The highest altitude reached is 5,300 feet above sea level at Nanuoya, which place, measured on the map as the crow flies, is 36 miles from Rambukana—Rambukana being 53 miles from Colombo and 313 feet above sea level—and here the steep ascent practically begins; whereas the actual mileage traversed by the railway between Rambukana and Nanuoya is 78 miles, and the rise about 5,000 feet. These figures better represent the precipitous and tortuous character of the line.

The branch line to Matale ($17\frac{1}{2}$ miles) has no marked feature except an iron-girder bridge, 664 feet long, on five piers, crossing the Mahawella River, the cost of which was \$65,000. The stations are about $4\frac{1}{2}$ miles apart; those on the main line from Colombo to Nanuoya averaging about 6 miles apart. This line taps a worn-out coffee district, the new industry of which may be tobacco. The lines from Colombo to Kandy, likewise Peradeniya to Nawalapitiya, and the sea-side lines, aggregating 123 miles, are now the unincumbered property of the colony, the total cost having been paid off in 1884. At the present time of writing, however, the other up-country lines (59 miles) can scarcely be said to be working at an appreciable profit, though the general manager of railways informs me that there is likely to be an improvement in this respect this year. The section from Peradeniya to Nawalapitiya (34 miles) may be yielding upwards of 3 per cent. on the invested capital; but the Matale line and the extension to Nanuoya are profitless, a circumstance owing, mostly, to the immense cost of their construction, the districts they penetrate affording no commensurate amount of traffic for so large an outlay.

SEA-SIDE LINE.

(Speed, 15 miles per hour, including stoppages.)

As hereinbefore intimated the line from Colombo to Kalutara ($27\frac{3}{4}$ miles) is on the broad-gauge of 5 feet 6 inches, the stations being sixteen in number and averaging a little under 2 miles apart. It is devoted almost exclusively to passenger traffic, and is a stupendous structure for that purpose; nevertheless, it pays a steady profit of about 3 per cent. upon the invested capital, viz, 2,185,912 rupees, or 78,771 rupees per mile; say in United States money \$984,660 and \$35,446, respectively.

This line, running on an almost dead level, closely follows the sea-shore, and skirts a thickly-populated country abounding in cocoa-nuts and other fruits and arrack, and containing several prosperous towns and villages where much handicraft work, such as carpentering, coopering, gold and silver smithing, precious-stone cutting, etc., is done. Its ultimate destination is probably Point de Galle, or perhaps further on to Hambantota, at present an isolated place on the southeast coast, 75 miles from Galle and 147 from Colombo; but, nevertheless, if given transport facilities the natural outlet of the present popular district of Uva. As before stated, no goods except parcels are conveyed by this sea-side line; which, from its colossal character, both in permanent way and rolling stock, is fit to carry the commerce of a continent. The passenger fares amount to about 3 cents per mile for first class, 2 cents for second class, and 1 cent for third class, United States money.

The principal engineering features of this line are an iron bridge across ~~Donadura~~ having a clear water-way of 600 feet, and another

FARES AND TRAFFIC ON UP-COUNTRY LINES.

Passenger fares from Colombo to Kandy (72 miles) amount to about 4 cents per mile for first class, 3 cents for second class, and $1\frac{1}{2}$ cents for third class, United States money.

The Matale line fares are about the same, but those on the Peradeniya to Nanuoya extension are 5 cents per mile for first class, $3\frac{1}{2}$ cents for second class, and $1\frac{1}{2}$ cents for third class, United States money. This being a purely local and domestic matter, into which the element of exchange scarcely enters, I have converted the local currency into United States currency, at the rate of 45 cents per rupee; calculated on a gold basis the amount of the fares would bear a reduction of at least another 10 per cent.

GOODS TRAFFIC.

Goods are divided into three classes and charged accordingly. There are also special rates for certain products, viz, coffee, cinchona, tea, etc., mostly the products of plantations belonging to Europeans, and live stock, full particulars of which are given in Appendix I; also the total goods traffic, which amounts to about 200,000 tons per annum, including railway materials and stone for the Colombo breakwater.

The total of profits earned on all the railway lines at present in operation here is about 3 per cent. on the invested capital, which, it is to be feared, is not likely to be appreciably increased so long as the present expensive broad-gauge system is adhered to. Briefly stated, the broad-gauge railways of this country have, in my judgment, proved a positive incubus to the island; excepting, perhaps, the line to Kandy, beyond which place the system never ought to have been extended.

LINES PROJECTED AND SURVEYED.

At present there is no railway construction in progress, but the following lines have been surveyed, viz: Kandy to Badulla, 3-foot 6-inch gauge, $62\frac{1}{2}$ miles, cost not estimated; Nanuoya to Haputale, 5-foot 6-inch gauge, 26 miles, \$3,013,000; Mahara to Chilaw, 5-foot 6-inch gauge, 40 miles, \$1,150,000; Mahara to Chilaw, 3-foot $3\frac{3}{8}$ -inch gauge, 40 miles, including mixed gauge to Colombo, \$1,200,000; Kalutara to Bentota, 5-foot 6-inch gauge, 9 miles, no published particulars; Mahara to Jaffna, 183 miles, no published particulars; Mattakuliya to Colombo (tramway), $4\frac{1}{6}$ miles, \$271,000.

The first of the above named, called "Lower Badulla route," passes through a mostly barren, unhealthy, and somewhat precipitous line of country, sparsely populated, and offering few attractions to agriculturists—probably its construction is not seriously contemplated by the Government. Nevertheless, it is the most practicable route by which to tap Badulla, and thus connect the province of Uva by rail with Colombo, besides affording the

preliminary for a scheme of narrow-gauge railways across the island to the fertile districts of Batticaloa and other important places on the eastern side of the island.

NANUOYA TO HAPUTALE — EXTENSION.

A line upon the Lartique or some other economical system could be built over the Lower Badulla route, aforesaid, for about one-fourth, proportionally, the estimated cost, viz, \$3,013,000, of the projected broad-gauge extension of 26 miles to Haputale, which, after all, will only partially penetrate and only serve a fraction of the province of Uva, all of the plantations of which are not likely to produce annually in the near future, for railway transport, more than 7,000 tons of produce, principally coffee, cinchona, and tea; at least one-third, perhaps one-half, of which may never seek the line in question unless it is extended another 28 miles to Badulla. The up-traffic will probably not exceed 15,000 tons, which, together with a possible 7,000 tons down, gives a total of 22,000 tons, though a commission has estimated it at 27,444 tons sure, whereas even the 22,000 tons I estimate are somewhat problematical and largely dependent on future development.

As, however, this expensive extension has now been sanctioned by the Imperial Government and may very soon be in process of construction, I have simply to add that the district it will only partially penetrate contains altogether about 40,000 acres, nominally under tea, cinchona, and coffee cultivation, the last-named produce fast disappearing. The total inhabitants number about 170,000. Two hundred, perhaps, of these are Europeans, mostly planters, who overlook about 35,000 Tamil coolie laborers. Probably another 10,000 natives are engaged in trade, cart transport, and other miscellaneous occupations, leaving 125,000, mostly Singhalese, dependent upon native agriculture, the products of which are all consumed within the province. The climate is unexceptionable, but the arable land unextensive and even now almost fully occupied. That the wealth of the 125,000 people, of all ages, engaged in native agriculture will be increased or their condition be improved economically by this railway extension is more than doubtful, for, alas, past experience from such causes indicates, throughout the central provinces, to the contrary. As a matter of fact there is not an interior district of this island (bar Kandy) that has been tapped or even nearly approached by a railroad where, after ten years' experience, the natives were not greatly worse off than they were before, and I wish I could believe that the present project in question would result differently. If the intention was to continue the broad-gauge extension on to Passara as a final terminus of that system, from which cheaper and more practical lines should radiate across districts urgently requiring them, I could see some utility in the project; as it now appears, however, I see nothing in it but a mistake.

~~will be born of this extension, or old ones within~~

create a demand for some of our farming implements. I annex, in Appendix II, a general summary of the estimated cost of the line in question, together with the alignment and list of gradients, the same being official. By these it will be noticed that the line will rise to 6,285 feet summit level, and descend to 4,761 feet at Haputale, the proposed terminus. These altitudes are given above railway datum, which is 70 feet higher than sea level. The heights above sea level are, therefore, 6,215 feet and 4,691 feet, respectively.

MAHARA TO CHILAW.

Mahara is a station on the line to Kandy, 9 miles from Colombo, and Chilaw is a town or hamlet situated on the west coast of the island, 48 miles from Colombo. The intervening country, containing about 170,000 inhabitants, is flat throughout, and for upwards of 30 miles from Colombo abounds in fine cinnamon and cocoa-nut plantations. North and east of Chilaw, in the neighborhood of Puttalam, there are fine forests of valuable timber, ebony, satin-wood, etc., and the land thereabouts is probably better than the average in Ceylon for agriculture. Cotton and tobacco cultivation are as likely to succeed there as anywhere else in the island, I should think, and a comparatively inexpensive line of light railway would prove a great boon and good investment by opening up the country, for it could be continued on to Puttalam, 42 miles further up the coast, and thence across the island, through Anuradhapura, or on to Jaffna, in the northern province, thereby effecting easy communication with that enterprising place, and affording transport for what is likely to prove, under the revival of the ancient irrigation system, the most fruitful district in Ceylon.

The line to Chilaw (40 miles), as at present surveyed, is conceived entirely in the interests of broad-gauge, and is estimate to cost 3,411,497 rupees, or 84,384 rupees per mile. There is also an estimate for a meter-gauge line, with a continuation of 9 miles, from Mahara to Colombo, amounting to 3,627,980 rupees, or 89,739 rupees per mile, which probably could be greatly modified. The goods traffic is estimated at 74,000 tons, which would probably be exceeded.

I give in Appendix III the official estimates of this line, both on the 5-foot 6-inch and meter gauges; also a summary of estimated goods traffic.

KALUTARA TO BENTOTA.

This will be a mere continuation for 9 miles of the sea-side line already described. It could probably be built for less than 50,000 rupees per mile, but is likely cost at least 70,000 rupees per mile.

MATALE TO JAFFNA

[183 miles]

would connect with the present broad-gauge line at Matale, and open up communication between Colombo and Jaffna, via Kandy and Anuradhapura, involving an ascent of 1,700 feet to Kandy, and a corresponding descent from Kandy to Colombo: whereas the

tinued on, as hereinbefore suggested, would run mostly upon a level, accommodate a much greater population, and serve a larger extent of virgin country.

COLOMBO CITY LINE [TRAMWAY].

The proposed tramway from Mattakkuliya to Colombo ($4\frac{1}{6}$ miles), estimated to cost 741,298 rupees, or \$296,500, has remained unconsidered for years. A few days since, however, the Colombo municipal council resumed consideration of the subject, and I subjoin Appendix IV, a newspaper report of the proceedings.

CONCLUSION.

From all I can learn, from observation and the literary annals of railways, *in actu* and *in ambiguo* here, the present penchant for expensive broad-gauge lines stops the way to that future development which ought to cover the whole country with a net-work of iron rails, on the cheapest system that has been found to be serviceable elsewhere under similar conditions.

The country is rich in undeveloped and possible products, but financially poor. There probably is not the cash equivalent of \$10,000,000 in the whole island. There is, however, notwithstanding admirable conduction, which must be admitted, as much pomp and circumstance with respect to railroading—so far as it has progressed—as would serve the richest community in the world, and the mass of the people groan under it.

The total cost of the $182\frac{1}{2}$ miles in operation was, exclusive of interest, 35,924,738 rupees, or \$16,166,132 in gold. It is in my opinion unreasonable for a people so poor in treasure to pay so much money for so little railroad, and the present railway debt, owed abroad, amounting to £1,253,000, or \$6,266,000, at 4 per cent. interest, should not, I think, be increased by the further construction of any line at the cost at present prevailing.

To support this proposition, I would respectfully point out that the railway debt, aforesaid, bearing 4 per cent. interest, is for only 59 miles of railroad, which is not yielding any appreciable profit, a state of affairs, it is to be feared, very unlikely to be remedied by building another 26 miles, at a cost of \$2,750,000, to carry, perhaps, 22,000 tons of goods traffic.

Doubtless the present Government would dislike—in giving to Uva the railway facilities its European denizens have long pined and agitated for—to put an attenuated tail, or less consequential line, upon the imposing structure its predecessors have carried so far in that direction, and time only will show whether or not such a sentiment, if it does exist, is justifiable economically.

APPENDIX I.—Miscellaneous railway fares and rates between Colombo and principal stations.

Colombo to —	Horse and carriage.				Goods, rates per ton.			Cattle rates.		Timber.	Special goods rates.
	One horse.	Two horses.	Three horses.	Carriages.	First class.	Second class.	Third class.	Half truck.	Full truck.	Per ton.	12½ and 25 cents per ton per mile.
	R. C.	R. C.	R. C.	R. C.	R. C.	R. C.	R. C.	R. C.	R. C.	R. C.	R. C.
Alutara South.....	3 50	5 25	7 0	5 25	4 70	3 50	2 35	5 0	7 0	2 80	3 50
Madure.....	.....	.....	.....	.....	3 0	2 25	1 50	5 0	5 0	1 80	2 25
Oratuwa.....	.....	.....	.....	.....	2 35	1 75	1 20	5 0	5 0	1 40	1 75
Harf.....	.....	.....	.....	.....	0 75	0 50	0 50	.....	.....	0 50	0 50
Ahara.....	.....	.....	.....	.....	2 50	1 70	0 85	.....	.....	1 0	1 25
Anaratgoda.....	.....	.....	.....	.....	4 25	2 85	1 45	.....	.....	1 70	2 15
Yangoda.....	3 0	4 50	6 0	4 50	5 75	3 85	1 95	5 0	5 75	2 30	2 90
Rigama.....	4 0	6 0	8 0	6 0	7 75	5 20	2 60	5 20	7 75	3 10	3 90
Bepussa.....	4 50	6 75	9 0	6 75	8 75	5 85	2 95	5 85	8 75	3 50	4 40
Gahawela.....	5 75	8 75	11 50	8 75	11 50	7 70	3 85	7 70	11 50	4 60	5 75
Mbukkana.....	6 75	10 25	13 50	10 25	13 25	8 85	4 45	8 85	13 25	5 30	6 65
Jugannawa.....	8 25	12 50	16 50	12 50	16 25	10 85	5 45	10 85	16 25	6 50	8 15
Adeniya.....	9 0	13 50	18 0	13 50	17 75	11 85	5 95	11 85	17 75	7 10	8 90
Idy.....	9 50	14 25	19 0	14 25	18 75	12 50	6 25	12 50	18 75	7 50	9 40
Ugastota.....	.....	.....	.....	.....	19 50	13 0	6 50	13 0	19 50	7 80	9 75
Tegama.....	10 50	15 75	21 0	15 75	20 50	13 70	6 85	13 70	20 50	8 20	10 25
Wala.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ale.....	11 75	17 75	23 50	17 75	23 0	15 35	7 70	15 35	23 0	9 20	11 50
Pola.....	10 0	15 0	20 0	15 0	19 75	13 20	6 60	13 20	19 75	7 90	9 90
Alapitiya.....	11 25	17 0	22 50	17 0	22 0	14 70	7 35	14 70	22 0	8 80	11 0
Pda.....	13 0	19 50	26 0	19 50	22 50	17 50	9 10	17 50	25 50	10 30	12 75
Wwala.....	14 50	21 75	29 0	21 75	28 50	19 90	10 60	19 90	28 50	11 40	14 25
Pu.....	16 50	24 75	33 0	24 75	32 50	23 10	12 60	23 10	32 50	13 0	16 25
Gala.....	17 50	26 0	34 50	26 0	34 0	24 30	13 35	24 30	34 0	13 60	17 0
Wakele.....	18 50	27 75	37 0	27 75	36 50	26 30	14 60	26 30	36 50	14 60	18 25
Goda.....	19 50	29 25	39 0	29 25	38 50	27 90	15 60	27 90	38 50	15 40	19 25
Oya.....	21 50	32 25	43 0	32 25	42 50	31 10	17 60	31 10	42 50	17 0	21 25

APPENDIX I. — Continued.

Coffee is charged at the following special rates per ton :	
	R. C.
From Nawalapitita to Colombo.....	12 25
" Gampola to Colombo.....	11 0
" Kandy to Colombo.....	10 0
" Peradeniya to Colombo.....	10 0
" Kadugannawa to Colombo.....	10 0
" Rambukkana to Colombo.....	7 25
" Polgahawella to Colombo.....	6 36
" Ambepusse to Colombo.....	5 50
" Katugastota to Colombo.....	10 50
" Wategama to Colombo.....	11 25
" Matale to Colombo.....	12 50
" Kalutara to Colombo.....	3 50
" Panadure to Colombo.....	2 25

Cinchona is charged at the following special rates per ton :	
	R. C.
From Henaratgoda to Colombo.....	3 40
" Veyangoda to Colombo.....	4 60
" Ambepussa to Colombo.....	7 0
" Polgahawella to Colombo.....	9 20
" Rambukkana to Colombo.....	10 60
" Kadugannawa to Colombo.....	13 0
" Peradeniya to Colombo.....	14 20
" Kandy to Colombo.....	15 0
" Gampola to Colombo.....	15 80
" Nawalapitiya to Colombo.....	17 60
" Katugastota to Colombo.....	15 60
" Wategama to Colombo.....	16 40
" Matale to Colombo.....	18 40
" Kalutara South to Colombo.....	5 60

Nanuoya line — Special rates for cinchona, coffee, and "class" goods per ton to Colombo.

Stations.	Cin- chona.	Coffee.	First- class goods.	Second- class goods.	Third- class goods.
	R. C.	R. C.	R. C.	R. C.	R. C.
Galbodde.....	20 40	14 0	25 50	17 50	9 10
Watawala.....	22 80	15 50	28 50	9 90	10 60
Hattou.....	26 0	17 50	32 59	23 10	12 60
Kotagalea.....	27 20	18 25	34 0	24 30	13 35
Talawakele.....	29 20	19 50	36 50	26 30	14 60
Watagoda.....	30 80	20 50	38 50	27 90	15 60
Nanuoya.....	34 0	22 50	42 50	31 10	17 50

DEFINITION OF CLASSES.

CLASS I.—Furniture, piano, or other musical instruments, 50 per cent. added; wine or other liquors in bottle; groceries, oilmanstores, millinery, textile fabrics, glassware, crockery, meat, fish and game, tools.

CLASS II.—Rice, grain of all kinds in bags or packages or in bulk; oil, wine, or other liquid in cask; jute, horns, jaggery, sugar, cocoa-nuts, tobacco (unmanufactured), cinnamon, vegetable, and agricultural produce generally; refined salt and saltpetre, bales of cotton, cordage, machinery (not included in special rates), manufactured metals, coir-matting, castings, soap, hardware, and agricultural implements.

CLASS III.—Coke, coal, minerals, building materials, unworked metals, manure, and fire-wood.

Tonnage of goods carried by rail during 1883 and 1884.

Particulars.	1883.		1884.	
	Tons.	Cwt.	Tons.	Cwt.
First-class goods.....	2,782	8	3,106	0
Arrack.....	1,226	18	1,397	0
Cocoa-nut.....	2,672	1	2,106	17
Cocoa-nut oil.....	1,897	9	1,848	19
Tea.....	19,866	11	16,928	1
Coffee.....	794	7	1,132	16
Cinchona.....	3,420	17	5,137	4
Rice.....	51,302	16	48,428	4
Salt.....	3,270	8	3,103	17
Other second-class goods.....	30,700	3	31,477	8
Timber, wrought and unwrought.....	2,736	1	2,765	5
Plumbago.....	5,404	8	3,563	1
Manure.....	5,332	12	3,927	15
	5,988	12	3,496	4
	355		222	5

APPENDIX II.—General summary of estimate, Nanuoya to Haputale.

Sections.	Distance.	Way and works.	Stations.	Tele-graph.	Total.
	<i>Mls. Chs.</i>	<i>Rupees.</i>	<i>Rupees.</i>	<i>Rupees.</i>	<i>Rupees.</i>
Section No. 1, Nanuoya to Ambawella	6 46.48	1,243,513	.....	4,444	1,247,957
Section No. 2, Nanuoya to Ambawella	2 31.00	539,465	33,000	1,313	573,778
Section No. 3, Ambawella to Haputale.....	16 41.72	4,039,774	137,500	9,086	4,186,360
Total.....	25 39.20	5,822,752	170,500	14,843	6,008,095
Per mile.....					235,704

Sections.	Land and com-pensation.	Super-vision.	Rolling stock.	Total.	Grand total.
	<i>Rupees.</i>	<i>Rupees.</i>	<i>Rupees.</i>	<i>Rupees.</i>	<i>Rupees.</i>
Section No. 1, Nanuoya to Ambawella	28,875	65,162	145,614	239,651	1,487,608
Section No. 2, Nanuoya to Ambawella	Nominal.	22,000	53,695	75,695	649,473
Section No. 3, Ambawella to Haputale.....	33,000	154,000	378,235	565,235	4,751,595
Total.....	61,875	241,162	577,544	880,581	6,888,676
Per mile.....				34,546	270,250

ALIGNMENT.

Sections.	Curves.	Straights.	Percentage of curves.	Percentage of straights.
	<i>Mls. Chs.</i>	<i>Mls. Chs.</i>		
Section No. 1, Nanuoya to Ambawella.....	3 75.52	2 50.96	66.80	33.20
Section No. 2, Nanuoya to Ambawella.....	1 34.25	0 76.75	59.80	40.20
Section No. 3, Ambawella to Haputale.....	10 13.28	6 28.44	61.53	38.47
Total.....	15 43.05	9 76.15		

Nanuoya to Ambawella, section No. 2—list of gradients.

From —	Height above datum.	To —	Height above datum.	Length.	Gradient.	Remarks.
		<i>Mls. Chs.</i>		<i>Chains.</i>		
Stake 77.....	6,007.00	0 2.00	6,007.00	5.00	Level.....	
<i>Mls. Chs.</i>						
0 2.00	6,007.00	0 25.00	6,030.00	23.00	1 in 66	Rising.
0 25.00	6,030.00	0 27.00	6,030.00	2.00	Level.....	
0 27.00	6,030.00	0 40.00	6,017.00	13.00	1 in 66	Falling.
0 40.00	6,017.00	0 64.00	6,017.00	24.00	Level.....	
0 64.00	6,017.00	1 17.00	6,056.60	33.00	1 in 55	Rising.
1 17.00	6,056.60	1 20.00	6,056.60	3.00	Level.....	
1 20.00	6,056.60	1 50.50	6,020.00	30.50	1 in 55	Falling.
1 50.50	6,020.00	1 55.00	6,020.00	4.50	Level.....	
1 55.00	6,020.00	2 12.00	6,060.70	37.00	1 in 60	Rising.
2 12.00	6,060.70	2 28.00	6,060.70	16.00	Level.....	Ambawella station ground.

Ambawella to Haputale district—list of gradients.

From—	Height above da- tum.	To—	Height above da- tum.	Length.	Gradient.	Remarks.
Section No. 1, Ambawella to Demodara:						
<i>Mls. Chs.</i>		<i>Mls. Chs.</i>		<i>Chains.</i>		
2 28.00.....	6,060.70	2 28.76	6,060.70	0.76	Level	Rising.
2 28.76.....	6,060.70	4 26.00	6,265.10	157.24	1 in 50.77	
4 26.00.....	6,265.10	4 40.10	6,265.10	14.10	Level	Rising.
4 40.10.....	6,265.10	4 60.00	6,285.00	19.90	1 in 66.....	
4 60.00.....	6,285.00	5 7.00	6,285.00	27.00	Level	Patupola station.
5 7.00.....	6,285.00	5 23.00	6,265.00	16.00	1 in 52.8...	Falling.
5 23.00.....	6,265.00	5 39.00	6,257.00	16.00	1 in 132 ...	Do.
5 39.00.....	6,257.00					
Section No. 2, Demodara to Idulgashena:						
<i>Mls. Chs.</i>						
0 0.00.....		5 32.00	5,883.93	248.72	1 in 44	Falling.
5 32.00.....	5,883.93	5 16.66	5,883.93	15.34	Level.....	Falling.
5 16.66.....	5,883.93		5,258.95	416.66	1 in 44.....	
Section No. 3, Idulgashena to Haputale:						
<i>Mls. Chs.</i>						
0 0.00.....	5,258.95	0 15.00	5,258.95	15.00	Level.....	Idulgashena station.
0 15.00.....	5,258.95	0 30.00	5,236.45	15.00	1 in 44.....	Falling.
0 30.00.....	5,236.45	0 49.00	5,212.70	19.00	1 in 52.8...	Do.
0 49.00.....	5,212.70	4 30.00	4,761.20	301.00	1 in 44.....	Do.
4 30.00.....	4,761.20	4 70.00	4,761.20	40.00	Level.....	Haputale station.

APPENDIX III.

BROAD-GAUGE LINE.

The following is a summary of the estimate for a line on 5-foot 6-inch gauge from Mahala to Chilaw, a distance of 40 miles and 34.24 chains, or 40.428 miles:

<i>Way and works.</i>	Rupees. Cts.
Earth-work	129,459 60
Bridges	555,862 0
Culverts.....	39,432 0
Permanent way.....	1,122,629 77
Fencing	23,000 0
Level crossings.....	46,700 0
Metaling roads.....	14,014 0
Total.....	1,931,097 37
Add for contingencies	193,109 73
Total for way and works.....	2,124,207 10
Or, per mile	52,542 96

Land stations, rolling stock, etc.

	Rupees.	Cts.
Engineering supervision.....	100,000	0
Rolling stock.....	512,400	0
Accommodations at Colombo station.....	70,000	0
Total.....	1,170,264	0
Add for contingencies.....	117,026	40
Total.....	1,287,290	40
Or, per mile.....	31,841	55

Recapitulation.

Estimate for way and works.....	2,124,207	10
Estimate for land, stations, etc.....	1,287,290	40
Grand total.....	3,411,497	50
Or, per mile.....	84,384	52

Summary of goods traffic.

	Tons.
Rice (calculating 2 bushels per 100 pounds).....	12,500
Copperah and cocoa-nuts.....	50,000
Salt.....	9,000
Food stuffs, cloth, etc.....	1,500
Timber.....	500
Fish.....	300
Vegetables, plantain, pumpkins, manioca, etc.....	200
Total.....	74,000

METER-GAUGE LINE.

	Rupees.	Cts.
Earth-work.....	118,955	60
Bridges.....	547,708	0
Culverts.....	35,858	0
Permanent way.....	993,664	45
Fencing.....	23,000	0
Level crossings.....	46,700	0
Metaling roads.....	14,014	0
Total.....	1,779,900	5
Add for contingencies.....	177,990	0
Total for way and works.....	1,957,890	5
Or, per mile.....	48,429	6

Land, stations, rolling stock, etc.

Land and compensation for house property.....	109,500	0
Stations.....	349,150	0
Telegraph, at 500 rupees per mile.....	20,214	0
Engineering supervision.....	100,000	0
Rolling stock.....	741,400	0
Laying third rail to Colombo and in Colombo station yard.....	112,000	0
Works at Colombo station.....	86,000	0
Total.....	1,518,264	0
Add for contingencies.....	151,826	40

Total

RAILWAYS IN CEYLON.

Recapitulation.

	Rupees.	Cts.
Estimate for way and works.....	1,957,890	5
Estimate for land, stations, etc.....	1,670,090	40
Grand total.....	3,627,980	45
Or, per mile.....	89,739	30

ESTIMATE FOR A METER-GAUGE LINE WITH BREAK OF GAUGE AT MAHARA.

Way and works as before.....	1,957,890	5
Or, per mile.....	48,429	6

Land, stations, rolling stock, etc.

Land and compensation for house property.....	109,500	0
Stations.....	349,150	0
Telegraph, at 500 rupees per mile.....	20,214	0
Engineering supervision.....	100,000	0
Rolling stock.....	741,400	0
Works at Mahara station.....	259,500	0
Total.....	1,579,764	0
Or, per mile.....	39,075	98

Recapitulation.

Estimate for way and works.....	1,957,890	5
Estimate for land, rolling stock, etc.....	1,579,764	0
Grand total.....	3,537,654	5
Or, per mile.....	87,505	4

APPENDIX IV.

The proposed tramway for Colombo.

Resolved, That the council be recommended to repeat the request made to the Government in letter No. 79, of November 6, 1886, for permission to enter into an agreement with Messrs. Freudenberg & Co., upon the basis of the concessions already approved by both parties.

Read, in connection with the tramway scheme, a letter dated April 28, 1888, from Messrs. Freudenberg & Co., requesting to be allowed the choice of as many motive powers as possible, and intimating that, while they are prepared to accept the concessions with electricity and cables only as motive powers, the formation of a company would, in that case, be very much more difficult than otherwise, if not indeed impossible.

Mr. MacBride moved that, in view of the concluding paragraph of Messrs. Freudenberg & Cos'. letter of April 28, and of the great improvement which has taken place in the construction and working of street tramways, the concessions adopted by the municipal council on October 12, 1886, on the recommendation of the public works committee, be, after they have received the assent of the Government, advertised locally and in England, with a view to inviting tenders for the construction and working of tramways within this municipality. Mr. Walker seconded. Carried.

Resolved, That a copy of the above resolution be forwarded to Messrs. Freudenberg & Co. The council adjourned to Tuesday, May 1, 1888, at 3 p. m.

COLOMBO, May 18, 1888.

W. MOREY,
Consul.

PROPOSED NEW PORTUGUESE TARIFF.

[Transmitted by Mr. Wilbur.—Translation.]

The treaty of commerce and navigation celebrated with France terminating in 1892, it becomes necessary to gather the elements for the organization of a new project for a general custom-house tariff, that may hereafter serve as a basis for such negotiations as may be established with foreign nations: His Majesty the King sees fit to direct the superior council of the custom-house to make the necessary examination and studies to organize the said project of tariff. For this purpose the same council will apply to all corporations and authorities who may possibly be able to throw light on the subject.

MARIANNO DE CARVALHO.

PALACE, *July 28, 1888.*

INGRAIN CARPET INDUSTRY.

COST OF MANUFACTURING TWO-PLY 4-4 INGRAIN CARPET, SUPERIOR QUALITY,
IN AMERICA AND IN ENGLAND.

The American cost.

The mill from which the account is taken runs 75 power looms, with an annual product of 675,000 yards, an average of 30 yards per loom per day. The price paid for weaving is $5\frac{1}{4}$ cents a yard. At 180 yards a week this brings up the average earnings to \$9.45. The additional labor is covered by the following items:

6 loom fixers, at \$16 per week.....	\$96	1 engineer.....	\$15
1 loom boss.....	23	2 cop boys, at \$3.50.....	7
12 winders, at \$6.....	72	2 twist winders, at \$3	6
6 spoolers, at \$6.....	36	1 card-cutter	9
3 warpers, at \$12	36	1 designer	25
1 shearer.....	12		
2 twistors, at \$5.50.....	11	Total.....	348

Total for the year, of fifty weeks, \$17,400. Each yard costs, therefore, in additional labor expense, 2.57 cents, and in total labor, 7.82 cents. In most mills of this size, I am told, the designing and card-cutting are done outside by the piece much cheaper than the above. On the other hand the cost of burling is not included. The total of additional labor put at \$18,000 would cover all and everything and bring up the total labor cost to 7.92 cents per yard.

On the Knowles & Crompton looms, now rapidly coming into use in place of the Murkland looms, the product is 40 yards and above a day, and the weaving wages are reduced to 4 and $4\frac{1}{2}$ cents a yard. In the eastern

pay for the loom in three years. These new looms cost about one-half the price of the old style.

The material used enters into the mill account as finished yarn. The labor-cost in the spinning—demonstrated so frequently before in my reports to be as cheap, and in many instances cheaper in America than in England—need not be gone over again in the coarser yarns used in ingrain carpets, which certainly can be made as cheaply as in England. It can safely be taken on the basis of the English spinning cost. Not so, however, in the wools. They show as decided a difference in the cost as in the finer goods described in previous reports. If it is difficult to follow the ingredients of a warp and a weft thread in a fine “all-wool” fabric for clothing purposes it is still more so in the yarns used for ingrain carpets, and while not much cheapening perhaps could be effected in labor, a great margin is usually found in the mixing of the material. Shoddy, cows’ hair, and wool all peaceably lie down together in the same yarn thread, while neighboring threads contain the pure article as cut from the real unadulterated sheep.

For a piece of 120 yards the following quantities of yarns, at the respective prices, dyed and ready for use, are required:

39 pounds of worsted warp, at 50 cents	\$19.50
33 pounds of black for filling, at 18 cents	5.94
26 pounds of single white, at 24 cents	6.24
26 pounds of double-reel white, at 27 cents	7.02
26 pounds of mousque, at 30 cents	7.80
	—
Total per piece	46.50

and per yard, 38.75 cents; labor-cost, 7.92; total cost, 46.67 cents.

OTHER EXPENSES.

The additional expenses are:

Interest on capital (\$100,000 at 6 per cent.)	\$6,000
Wear and tear of machinery (\$65,000 at 5 per cent.)	3,250
Cost of coal, 2 tons per day, at \$4 (600 tons)	2,400
Insurance, 2 per cent. on \$100,000	2,000
Taxes, \$1.85 on \$50,000	925
Office expenses, clerk hire, etc.	2,000
Selling expense, 2 cents per yard	13,500
	—
Total	30,075

equal to 4.4 cents, which, with the material and labor-cost, 46.67 cents, brings up the total cost to 51.07 cents net. So that the total labor and selling and manufacturing expenses would stand as 12.32 cents.

The selling price of a somewhat lower quality was stated to me by another manufacturer, whose weaving price to the weaver is the same as the one in
which clearly demonstrated

The English Cost.

The manufacture of ingrain carpets in England is largely constructed on hand looms yet, and very likely will be continued so for some time to come. The reasons are obvious. The cost of production is nearly the same, and hand-loom weaving offers to the manufacturer the great advantage that he need not sink the greater part of his capital into fixed charges of costly machinery.

My first visit was to a manufacturer who employs about 120 looms, all of which are hand looms belonging to the weavers. The cost of his yarns is 10 pence a pound, or 20 cents all round, dyeing included; a pound and a quarter to the yard, 12½ pence or 25 cents. The cost of manufacturing, including wages and expense, delivered free on board, is 7½ pence or 15 cents. A sum total of net cost of 40 cents. The weaver gets his yarn and delivers the finished carpet, all ready for shipment, without any further charge to the manufacturer. That is to say he does the warping, weaving, and all of what is contained in incidental labor in power weaving, and for the completed delivered work he gets 5 pence, or 10 cents a yard. The remaining 5 cents cover what, in our estimate, is contained in incidentals and a small profit charge. He has no loom fixers, winders, spoolers, warpers, etc, to pay, no engineer, no coal for power, etc. The interest on capital is not heavy, as no great capital is required. The wear and tear percentage is entirely absent, and he can conduct his business free of all risks, frequently the outcome of the ownership of a large plant which has to be provided with work in order to save decay and decline resulting from material and pecuniary shrinkage of idle machinery. The cost of a hand loom is £13, or \$63, while a power loom, such as used in England, costs £120, or \$580. A good hand-loom weaver would turn out about 120 yards of this quality in a fortnight, with earnings of \$6 a week. Another manufacturer whom I visited employs both hand and power looms. His firm was pointed out to me by others as the largest makers of ingrain carpets by power. But he also stated to me that most all the ingrain-carpet weaving was done on hand looms yet, and that the largest makers were still making them in this manner. They commenced in 1868 as single workingmen weavers, he and his brother, and had gradually worked up. In 1874 they first began power-loom weaving. They were ridiculed by their fellow manufacturers, who all predicted disaster. Many had tried it before and had failed. Still they persisted and succeeded. In England they use the Murkland loom, the loom in use in America, where they are making room now for the newer and improved ones, Knowles & Crompton's, alluded to before. All of these are American inventions, as power weaving in ingrains has taken its rise there. Indeed, all the first power machines used in England were of American make. They were, however, soon superseded by English makers, as the American were found too poor—castings being used where hammered iron and steel are employed in the English loom, as my informant stated. That power weaving

England is due to causes partly stated above, and also to the fact that to make power-loom weaving profitable would require a large output with infrequent changes.

"The output is not large enough per loom to warrant the introduction of costly machinery. If a girl"—these are the words of my informant—"earns 12s. a week she is satisfied and can not be brought to work up higher than 15s. If she gets above that in times of great pressure, when some work up to £1 and even £1 4s., they soon fall back again. If we discharge them and take new ones it would be the same again in a very short time. They lack the ambition to rise above their station. Their present earnings suffice them to maintain that and the mode of living they are used to. Those who go to America go there to make their fortune, and then, of course, they work with a different spirit, as they are there freed from home influences and take up the spirit of their surroundings."

I have expressed this view frequently in reports and otherwise. Its correctness has been questioned in some quarters. It will therefore be of value to have the corroborative opinion of an English manufacturer whose experience and intelligence make him well qualified to judge the subject of comparative productiveness of labor from the English standpoint. He says further "that the English go along in the same way as their fathers. They want no changes. It is the same in Sheffield and other places." This firm (and many others do the same) is selling its own goods direct to the retail trade. One brother is almost always traveling in England and Scotland, while the other remains at home attending to the business and the factory.

The wages paid for power-loom weaving are 2d. farthing, or 4½ cents per yard of this quality. They employ, besides the hand looms, 26 power looms, with an average in a busy week of 3,000 yards. They employ besides the weavers —

1 loom boss, at 45s.....	\$10.80
2 loom fixers, at 30s., or \$7.20.....	14.40
5 spool winders, at 12s., or \$2.88.....	14.40
2 winders, at 12s., or \$2.88.....	5.66
2 warpers, at 12s., or \$2.88.....	5.66
1 shearer, at 16s.....	3.84
1 twister, at 9s.....	2.16
1 engineer, at 30s.....	7.20
1 cop boy, at 12s.....	2.88
1 card-cutter, at 12s.....	2.88
1 designer, at £5.....	24.00
Total	93.88

Burling is paid by the piece of 60 yards at 1s. 7d., or 38 cents per piece, equal to .636 cents per yard; \$93.88 of general labor divided on 3,000 yards is 3.129 cents, and with burling, 3.765 cents against 2.67 cents in America. This is, however, for a larger weekly output than ordinary, and for a week lower output would be realized a corresponding higher additional

of traveling to do, are also higher than in the American cost statement, and amount to from 5 to 6 per cent. of the value of the goods.

The selling price is 2*s.* 2*d.*, or 52 cents a yard. As the wool is considerably lower than the American, the English manufacturer, though his cost is higher, on the contrary has a much greater margin of profit left than the American, according to the following statement.

The cost of the yarns used in goods of this quality is 1*s.* 23/8*d.* per yard, or 28 3/4 cents.

The respective cost stands, therefore, as follows in power-loom manufacturing:

Items of cost.	America.			England.		
	Labor.	Expenses.	Total.	Labor.	Expenses.	Total.
	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>
Yarn			38.75			28.75
Weaving	4 to 5.25			4.50		
General labor.....	2.67		7.92	3.765		8.265
General expenses.....		2.4			5	
Selling expense		2	4.4		2.5	7.5
Total.....	7.92	4.4	51.07	8.265	7.5	44.515

Difference in cost of production in America, including—

	<i>Cents.</i>
Selling expenses:.....	— 3.445
Material.....	+ 6.555
Raw materials.....	+ 10

This statement of the English cost of power weaving brings out clearly what had been said by my first informant that the general cost of manufacture is about the same in both processes, and explains satisfactorily in figures what have been before given as reasons why the hand loom keeps the field successfully against the power loom. I have taken the highest American weaving wages paid, not taking into account that with the improved looms weaving is done at from 3/4 to 1 1/4 cents less per yard. Still, with all this, the general cost is much less than in England, and with wool at the English cost a yard of carpet could be produced in America for 41.07 cents which costs 44.515 cents in England. At the present depressed state of prices in carpets in America a very insignificant margin of profit is left to the carpet manufacturer, while the English manufacturer has a margin of 7.485 cents left. —TUNSTALL, ENGLAND, *July 9, 1888.*

J. SCHOENHOF,
Consul.

THE INCREASE IN SWEDISH DUTIES.

In the Rihsdag just closed protectionism has been the reigning element. On nearly everything duties have been put. In a previous dispatch (No. 181, of March 5) I have reported the duties put upon grain, which already are low.

Lead, worked, not specified, unpolished and unvarnished, 10 ore per kilogram (before 7 ore).

Shot, 10 ore per kilogram (before 7 ore).

OTHER DUTIES.

Vessels and boats of iron and steam-boats of wood, 10 per cent. ad valorem (before free).

Instruments: Pianos, 150 crowns per piece (before 60 crowns); grand pianos, 200 crowns per piece (before 100 crowns); hand organs, 10 crowns per piece (before 1 crown); music boxes, 3 crowns per kilogram (before 2 crowns); accordions, 1 crown per kilogram (before 50 ore).

Yarn: Many-threaded cotton thread, not colored, 20 ore (before 15 ore); colored or printed, 35 ore per kilogram (before 30); twisted linen and hemp thread, not colored, 40 ore (before 20 ore); colored, 60 ore per kilogram (before 40 ore); jute thread, not colored and unbleached, 6 ore (before free); colored, bleached, or printed, 18 ore per kilogram (before 10); sail and binding yarn, sized, colored, etc., 40 ore per kilogram (before 20).

Cloth: Embroidered works, 20 per cent. ad valorem, when the cloth is duty free (before 10 per cent.); jute cloth, unbleached and not colored, 10 ore per kilogram (before free); woven felt of cattle, 25 ore per kilogram (before free); sacks, the cloth of which they are made and 10 per cent. ad valorem (before, the cloth of which made).

Book-binder's works: Albums, 2 crowns per kilogram (before 1 crown); bindings, 1 crown per kilogram (before 60 ore); books in bindings of paper and cloth, without gold, 50 ore; in other bindings, 2 crowns per kilogram (before 25 ore); maps with Swedish print, not bound, 1 crown 50 ore; maps with Swedish print, bound, 2 crowns per kilogram (before free).

Chemico-technical preparations: Albumen, 1 crown 50 ore per 100 kilograms (before free); sulphated clay, 1 crown per 100 kilograms (before 5 per cent. ad valorem); shoe blacking, 15 ore per kilogram (before 5 ore); ink, 10 ore per kilogram (before 6 ore); cement, 40 ore per 100 kilograms (before free); color boxes, 1 crown 50 ore per kilogram (before 80 ore); gypsum, burnt and ground, 40 ore (before free); plaster of Paris works, 20 ore per kilogram (before 10); glass bottles of light green or half-white color, not polished, 6 ore per kilogram (before 2 ore); chemical glass, 10 ore per kilogram (before free); patent glass, etc., 7 ore per kilogram (before free); glass powder, 2 ore per kilogram (before free); yeast, 20 ore per kilogram (before free); chalk, white, ground or separated by washing, 1 crown per 100 kilograms (before free); glue, 20 ore per kilogram (before 10 ore); smelling water, 2 crowns per kilogram (before 1 crown); oils, vegetable, volatile, 2 crowns per kilogram (before 1 crown); starch, 17 ore per kilogram (before 10 ore); fire-proof bricks, thick, for floors and walls, 20 ore per 100 kilograms (before free)—thinner floor and wall plates, glazed, will be treated as faience, with 10 to 16 ore per kilogram (before 3 ore); sulphuric acid, 0.5 ore per kilogram (before free); wax, 15 ore per kilogram (before free).

Brushmaker's works, set in unpolished or painted wood or iron, 12 ore per kilogram (before 10 ore); painter's or mason's brushes, 12 ore per kilogram (before free).

Basket-maker's works, "other kinds" (than of twigs not paled and coarse shavings), 1 crown per kilogram (before 60 ore).

Playthings, 2 crowns per kilogram (before 1 crown 50 ore).

Work in wood, 15 per cent. ad valorem (before 10 per cent.).

Wooden wares: Pine and fir, without polishing, 5 ore (before 2 ore); pine and fir, with polishing, 10 ore (before 4 ore); elm, ash, and native woods, 30 ore (before 8 ore); pear, mahogany, and other foreign woods, 60 ore per kilogram (before 15 ore).

Pitch, 2 crowns per 100 kilograms (before free).

Boots, with wooden bottoms, 94 ore per kilogram (before free).

Lasts, 10 ore per kilogram (before free).

Cordage, 10 ore per kilogram (before free).

Masks, 50 ore per piece (before 25 ore).

Fancy goods, 2 crowns per kilogram before 80 ore).

Fans, 5 crowns per kilogram (before 1.20 crowns).
 Paste-board, 1 ore per kilogram (before free).
 Juice of fruit and berries, 30 ore per liter (before 15 ore).
 Cigars and cigarettes, 4 crowns per kilogram (before 3 crowns).
 Flowers, 2 crowns per kilogram (before 30 ore).
 Plants, 30 ore per kilogram (before free).
 Turfy soil, 30 ore per 100 kilograms (before free).
 Furniture and movable goods, old and used, 15 per cent. ad valorem.

On the other side, the duty has been decreased on coffee from 26 öre to 12 öre per kilogram, and on tea from 80 to 50 öre per kilogram.

The following goods have been declared free of duty:

Aniline colors, which before had a duty of 5 per cent. ad valorem.
 Indigo, extract of indigo, indigo carmine, and cochineal (before 20 ore per kilogram).
 Fat, not volatile oils, in wood (before 2 ore per kilogram).
 Lighting oils (before 2 ore per kilogram).
 Eyes of enamel.

The quantity used for calculating the tariff is the kilogram and *mea*. The par value of a crown is 26.8 cents, and a crown has 100 öre.—STOCKHOLM, SWEDEN, *June 28, 1888.*

NERE A. ELFWING,
Consul.

THE ITALIAN SILK TRADE IN 1887-'88.

The silk "campaign" of 1887-'88, which reaches its close with the month of June, has proved an unfortunate and unprofitable one for the Italian silk industry. The harvest of 1887, which gave promise of being unusually abundant, commenced with low prices for cocoons. In the midst of the harvest a report was raised and assiduously circulated that the yield had been greatly overestimated, and was in reality much inferior to that of the preceding year. The easily deluded and frightened reelers began eagerly to provide themselves, and a sharp advance took place in the price of cocoons, which, commencing in southern Italy at 3.25 francs per kilogram, were selling at the close in Piedmont for 4.50 francs. As a matter of fact, the harvest was a good one, and very satisfactory in the quality of the cocoons, especially of the native yellows, as the following table shows:

Race.	Quantity.	Weight of cocoons, yielding 1 kilogram of silk.	Amount of silk produced.
	<i>Kilograms.</i>	<i>Kilograms.</i>	<i>Kilograms.</i>
Original Japan greens.....	2,600,000	13.50	192,592
Reproduced Japan greens.....	10,260,000	13.50	760,000
	26,140,000	11.00	2,376,363

A comparison with previous years shows that the harvest of 1887 was in this respect exceptionally good:

Year.	Quantity of cocoons.	Weight of cocoons employed per kilogram of silk.	Yield in silk.
	<i>Kilograms.</i>	<i>Kilograms.</i>	
1879.....	18,526,446	13.94	1,329,013
1880.....	41,573,189	14.60	2,847,478
1881.....	39,364,091	12.96	3,052,784
1882.....	21,869,076	12.33	2,584,677
1883.....	41,625,299	12.58	3,308,847
1884.....	36,464,663	12.71	2,868,974
1885.....	32,266,017	11.82	2,729,781
1886.....	41,397,323	12.12	3,413,299
1887.....	39,000,000	11.72	3,328,955

The yield per ounce of seed incubated was likewise good, and indicative of the advance in sericulture made in Italy. In 1887 the result was:

Race.	Seed incubated.	Product in cocoons.		Price per kilogram.	Total value.
		Total.	Per ounce.		
	<i>Ounces.</i>	<i>Kilograms.</i>	<i>Kilograms.</i>	<i>Francs.</i>	<i>Francs.</i>
Original Japan greens.....	100,000	2,600,000	26	3.40	8,840,000
Reproduced Japan greens.....	380,000	10,260,000	27	3.40	34,884,000
Native yellows.....	770,000	26,140,000	33	4.00	104,560,000
Total.....	1,250,000	39,000,000	* 31.20	* 3.80	148,284,000

* Average.

In comparison with previous years, the yield per ounce of seed incubated was as follows:

Year.	Seed incubated.	Product in cocoons.		Price per kilogram.	Total value.
		Total.	Per ounce.		
	<i>Ounces.</i>	<i>Kilograms.</i>	<i>Kilograms.</i>	<i>Francs.</i>	<i>Francs.</i>
1879.....	1,600,000	18,526,446	11.57	5.70	105,600,742
1880.....	1,719,390	41,674,109	24.24	4.00	166,696,436
1881.....	1,592,910	39,837,661	21.01	3.90	155,366,878
1882.....	1,336,452	31,628,112	23.66	4.43	140,330,338
1883.....	1,456,137	42,211,039	29.00	3.63	153,243,236
1884.....	1,424,595	36,816,965	25.84	3.808	140,204,385
1885.....	1,233,036	32,266,017	26.17	3.12	100,803,233
1886.....	1,246,614	41,397,323	33.21	3.69	152,936,157
1887.....	1,250,000	39,000,000	31.20	3.80	148,284,000

The campaign opened auspiciously, and in July raws had obtained an advance of 2 francs per kilogram. August was a period of exceptional activity. It was an open secret that the...

had been so remarkably successful, was again at work; stocks were low, and everything pointed to increased activity in silk manufacturing. The fear of a still further rise led manufacturers to provide themselves in anticipation, and the increased demand brought about a still further rise of 2 francs. During the first half of September the same tendency prevailed, and the market continued strong. The second half of the month was marked by an increased resistance on the part of the buyers, and business became dull. October developed an increasing weakness on the part of the holders, while transactions remained comparatively limited. It was becoming apparent that the syndicate had not been equal to the occasion, and smaller holders were unable to continue their resistance. By November the market had become thoroughly weak, and before the end of the month the advance of the previous months had been entirely lost. At the beginning of December there was a moment in which there seemed to be indications of returning strength; but political uncertainty, financial weakness on the part of the holders, and vigorous resistance on the part of the financially stronger buyers speedily dissipated these hopes, and the year ended with prices as low as those of June. The following tables will give a good idea of the position at the close of 1887:

Silk conditioned at Milan during the last ten years.

Months.	1878-'79.	1879-'80.	1880-'81.	1881-'82.	1882-'83.
July.....	209,665	135,185	191,700	224,355	227,235
August.....	231,250	167,855	262,720	325,820	272,860
September.....	230,630	167,370	262,370	391,675	304,445
October.....	245,895	228,525	255,150	429,985	307,365
November.....	245,265	256,700	264,460	395,915	269,905
December.....	196,370	281,285	244,240	456,837	287,560
January.....	206,125	225,335	260,170	275,720	272,340
February.....	186,635	211,555	275,985	251,050	256,655
March.....	238,115	278,835	321,230	291,185	287,150
April.....	290,095	202,130	240,560	249,030	270,200
May.....	383,295	217,645	242,960	340,575	288,310
June.....	240,000	230,560	230,885	190,480	302,860
Total.....	2,903,340	2,603,980	3,052,430	3,822,627	3,346,885

Months.	1883-'84.	1884-'85.	1885-'86.	1886-'87.	1887-'88.
July.....	224,885	215,960	242,830	248,765	290,480
August.....	296,220	259,725	248,820	363,510	415,100
September.....	293,450	275,680	272,260	372,070	382,070
October.....	330,615	301,645	333,215	503,585	397,695
November.....	324,035	261,000	454,154	471,640	316,025
December.....	299,830	284,895	402,540	316,395	323,390
January.....	291,765	270,945	361,550	245,745	.....
February.....	290,610	252,295	252,430	236,180	.....
March.....	311,145	302,590	291,970	320,115	.....
April.....	364,405	248,970	221,175	315,455	.....
May.....	.....	.....	258,665	336,878	.....
June.....	.....	.....	.....	.....	.....

Table of prices at Milan.

Date.	Organzines.					Trams.					Raws.				
	Grade.	Classical.	Sublimes.	Fine average.	Good average.	Grade.	Classical.	Sublimes.	Fine average.	Good average.	Grade.	Classical.	Sublimes.	Fine average.	Good average.
1883.															
June 30.....	16-20	65	63	60	58	.....	.....	.....	.....	.....	8-10	55	53	52	51
	18-22	63	61	59	57	.....	.....	.....	.....	.....	9-11	54	52	51	50
	20-24	62	60	58	57	20-24	62	59	58	57	10-12	53	52	50	50
	22-26	62	59	58	59	22-26	60	58	57	56	11-13	53	51	50	49
December 31.....	16-20	64	62	61	60	.....	.....	.....	.....	.....	8-10	55	54	52	51
	18-22	63	61	60	59	.....	.....	.....	.....	.....	9-11	54	53	52	50
	20-24	62	60	59	57	20-24	61	59	58	57	10-12	53	52	51	49
	22-26	61	59	58	56	22-26	60	58	57	56	11-13	52	51	50	48
1884.															
June 30.....	16-20	65	63	62	61	.....	.....	.....	.....	.....	8-10	55	54	52	51
	18-22	64	62	61	60	.....	.....	.....	.....	.....	9-11	54	53	52	50
	20-24	62	61	60	58	20-24	61	59	58	57	10-12	53	52	51	49
	22-26	61	60	58	57	22-26	60	58	57	56	11-13	53	52	50	48
December 31.....	16-20	63	61	59	58	.....	.....	.....	.....	.....	8-10	54	53	51	.....
	18-22	62	60	58	56	.....	.....	.....	.....	.....	9-11	53	52	49	47
	20-24	61	59	57	55	20-24	60	58	56	55	10-12	52	51	48	46
	22-26	60	58	56	54	22-26	59	57	55	52	11-13	52	50	47	45
1885.															
June 30.....	16-20	58	55	53	52	.....	.....	.....	.....	.....	8-10	48	47	45	.....
	18-22	56	54	52	51	.....	.....	.....	.....	.....	9-11	47	46	44	43
	20-24	55	53	51	50	20-24	54	52	51	50	10-12	46	45	43	42
	22-26	55	52	50	49	22-26	53	52	50	48	11-13	45	44	42	40
December 31.....	16-20	64	62	60	59	.....	.....	.....	.....	.....	8-10	55	53	52	.....
	18-22	62	60	59	58	.....	.....	.....	.....	.....	9-11	54	52	51	50
	20-24	61	59	58	57	20-24	60	58	57	56	10-12	53	51	50	49
	22-26	60	58	57	56	22-26	58	57	56	54	11-13	52	51	50	48
1886.															
June 30.....	16-20	62	60	58	56	.....	.....	.....	.....	.....	8-10	53	51	49	.....
	18-22	60	59	56	54	.....	.....	.....	.....	.....	9-11	52	50	48	46
	20-24	59	58	55	53	20-24	58	56	54	53	10-12	51	49	47	46
	22-26	58	57	54	52	22-26	57	55	53	51	11-13	50	48	46	45
December 31.....	16-20	68	66	64	62	.....	.....	.....	.....	.....	8-10	59	58	57	56
	18-22	66	64	63	61	18-22	64	63	61	60	9-11	58	57	56	54
	20-24	64	63	61	60	20-24	63	62	60	58	10-12	57	56	55	53
	22-26	63	62	60	58	22-26	62	61	59	57	11-13	57	56	54	53
1887.															
June 30.....	16-20	59	57	56	.....	.....	.....	.....	.....	.....	8-10	52	50	48	47
	18-22	58	56	54	53	18-22	56	55	54	53	9-11	51	49	47	46
	20-24	57	55	53	52	20-24	55	54	53	52	10-12	49	48	46	46
	22-26	56	55	53	52	22-26	55	54	53	52	11-13	48	47	46	46
December 31.....	16-20	59	58	57	.....	.....	.....	.....	.....	.....	8-10	51	50	.....	.....
	18-22	58	57	56	55	18-22	56	55	54	.....	9-11	50	48	48	47
	20-24	57	56	54	53	20-24	55	54	53	52	10-12	49	47	46	45
	22-26	56	55	53	52	22-26	54	53	52	50	11-13	47	46	45	53

For the first four months of 1888 the course of the silk market is accurately described as a liquidation at steadily decreasing prices. In February the silk conditioned at Milan reached a total of 278,070 kilograms Italians and 89,100 Asiatics. The prices had reached a lower point than at any time since October, 1885—the lowest on record; and the comparison is still further to the disadvantage of 1888.

in the fresh state, some 70 centimes less than in 1887, and for dried cocoons the difference was from 1 to 1½ francs. In March the silk conditioned amounted to 372,160 kilograms. The silk exported to the United States in these two months was likewise unusually large. In fact, these were months of complete surrender and disastrous realization. At the beginning of May the prices were as follows: Raws, fine average and sublimes, titles 9 to 16, from 41 to 44 francs per kilogram; organzines, same quality, title 18-20, from 50 to 51 francs; fine average, title 19-21, 49 francs. These prices have remained stationary.

The exports of raw silk from Milan to the United States for the twelve months ending May 31, 1888, as compared with the preceding twelve months, were as follows:

Month.	1886-'87.	1887-'88.
	<i>Bales.</i>	<i>Bales.</i>
June	217	278
July	207	228
August	377	365
September	416	423
October	563	437
November	483	243
December	427	270
January	181	276
February	163	387
March	287	438
April	519	407
May	500	424
Total	4,340	4,176

One of the most striking features of the year was the breakdown of the syndicate, and an explanation of their failure would undoubtedly prove both interesting and instructive. Various reasons are alleged. One especially dwelt upon, and undoubtedly of some importance, is the lack of support exhibited by the reelers and holders. As a matter of fact, the financial weakness of many of these lessens their strength of resistance, and renders them subject to easily-exaggerated alarms. Add a natural lack of commercial aptitude, and an inability for combined action, and their influence, as a source of weakness, becomes evident; but beyond this there were other influences at work. As compared with the previous great operation of the syndicate, the attempt was managed with much less skill. In the first place, it may be doubted whether the time was well chosen. The operations were commenced in June, when all indications pointed to a remarkably abundant crop—hardly a time to speculate on a rise. It was claimed that the crop was 15 per cent. inferior to that of the preceding year, which figure was afterwards reduced to 10 per cent. Granting this, the result was a yield of 2,200,000 of the past five years. Further, there was a good

syndicate extended their operations thither; but, although they were able to influence the markets somewhat, prices remained much below those of Italians. The Japanese, it may be assumed, reaped the greatest profit by the movement, for they were able to unload their silk at advanced prices, to the great detriment of Italians. The syndicate had undertaken more than they could carry out. They had underrated Asiatic competition. They claim to have discovered quickly the unfavorable position of affairs, and, having given up the idea, to have soon got rid of their stock without great losses. Their assertions, however, are received rather skeptically. As to their intentions for the future, it is hardly probable that, in view of their remarkable success in 1885-'86, they will be satisfied with their last unsuccessful venture; but it is safe to assume that the conditions will be studied more carefully, and that the plan will not long beforehand be the talk of the street and known in all its details, as seems to have been the case this year.

Another feature of the year remaining to be commented on, is that the quality of the silk delivered by the reelers was, in many cases, greatly inferior to that called for by the contracts; unfortunately, not an uncommon occurrence, but especially marked this year. Where a corner is attempted, all silk offered must be taken without too close scrutiny, for it would otherwise be thrown on the market. The temptation to run at a higher rate of speed and to use an inferior material would, in such cases, be very great, and this was precisely the course pursued by a large number of the reelers. Many complaints have been made by parties buying for their own consumption, and having no connection with speculation, but it occurs to no one to attempt by legal means to force the reelers to keep to their contracts. Law is proverbially uncertain nowhere more so than in Italy. Business precedents are so vastly different from those in America that excuses for non-fulfillment of contracts, such as a bad season, lack of water, and other similar reasons; in a word, the so-called "*forza maggiore*," which may be translated as a "*dispensation of Providence*"—excuses which it would never occur to an American to even offer—are not only proffered in law courts, but calmly excepted as good and sufficient. In this matter of dishonest reeling, as in certain other respects, the influence of the syndicate must be qualified as undoubtedly bad. American buyers must bear in mind this propensity of the reelers to deliver an inferior quality, and emphasis is to be laid upon the recommendation in a previous report to exercise care in the selection of houses to be dealt with and in the inspection of silk delivered.

This year the Italians have come to realize the growing importance of Asiatic competition, and the prevailing sentiment at present is one of consternation. Hitherto, although the consumption of Asiatic silks has been large and constantly on the increase, they have been employed for different purposes, and have thus not entered into direct competition with Italians. Asiatics have been used mainly in larger titles; Italians in finer titles, and especially whenever a regular and perfect thread was required. In the year

although at first they made their way very slowly, they have in late years been revolutionizing the Asiatic silk trade. The coarse, irregular home-reeled silk has been giving place to the machine-reeled thread, especially in Japan. For a long time the price of such silks was higher than that of Italians. This year they have undersold the latter, and the whole industry here is threatened. A few figures will throw a light on the situation. According to calculations made at Lyons the world's product of raw silk in the years 1884 to 1887, inclusive, was as follows:

Country.	1884.	1885.	1886.	1887.
France and Spain.....	568,000	591,000	729,000	800,000
Italy and Austria	2,952,000	2,625,000	3,405,000	3,750,000
Total of Europe	3,520,000	3,216,000	4,134,000	4,550,000
Levant (Syria, Broussa, etc.).....	730,000	623,000	677,000	730,000
Exportations from Shanghai.....	2,695,000	2,631,000	2,444,000	2,450,000
Exportations from Canton.....	774,000	715,000	1,110,000	1,080,000
Exportations from Yokohama	1,346,000	1,372,000	1,484,000	2,100,000
Exportations from Calcutta.....	861,000	760,000	781,000	800,000
Total of Orient	5,676,000	5,478,000	5,819,000	6,430,000
Grand total (world).....	9,926,000	9,317,000	10,630,000	11,710,000

It will be seen that Japan especially has made a great advance, and this is shown even more strikingly by the following figures. The exportations were, approximately: In 1870, 14,000 bales, of 48 kilograms each; in 1878, 19,257 bales, of 50 kilograms each; in 1883, 29,907 bales, of 55 kilograms each; in 1887, 37,000 bales, of 60 kilograms each.

Adding to the latter some 8,000 bales in stock at Yokohama, a total of 46,000 bales is reached. Considering the low figure at which the first exported home-reeled Japans, then known as Mybaschs, were sold, it is evident that silk production at the present or even lower prices must be very profitable to the Japanese. It is also Japan which competes with Italy and Cévennes in the excellence of the thread, which is said to be regular and even, and, moreover, of a light color. It is stated that Asiatic silks, on account of their white or light green color, have the great advantage over Italians of losing in the preparation for dyeing only 17 to 19 per cent., while the latter lose 22 to 23 per cent. for greens and 24 to 25 per cent. for yellows. The increased employment of Asiatics this year is well exhibited by the statistics of the silk conditioned at Lyons for the first four months of 1888, as compared with the corresponding months of 1887.

Evidently the Italians have cause for alarm, especially when they consider having taken the first and most difficult step in the direction of

cess similar to what has occurred in wheat. American competition has reduced the price of the latter, formerly the great staple of Lombardy, to what seemed a ruinous figure, and has fixed this as the permanent price. Asiatic competition will do the same for silk, and the figure to which the price of silk is likely to settle is set between 35 and 40 francs per kilogram.

Raw silk conditioned at Lyons.

Country of origin.	First four months of 1887.	First four months of 1888.
	<i>Kilograms.</i>	<i>Kilograms.</i>
France	127,000	95,100
Italy	133,000	163,900
Syria and Broussa	44,800	61,900
China	206,300	238,800
Canton	99,100	176,100
Japan	134,900	209,000
Tussah.....	69,100	28,500

In the competition between Italy and Asia the conditions are by no means entirely in favor of the former. One factor to be taken into consideration is the depreciation of silver, which is equivalent to a reduction of several francs in the price of Asiatics. For transportation from Shanghai to Marseilles and Lyons the cost is estimated at about 45 francs per 100 kilograms, while from Milan to Lyons alone the expense is 30 francs, to which must be added 38 francs export duty. At present the new French tariff, which went into operation March 1, is an additional burden of 2 francs per kilogram, which, so far, has been borne mainly by the Italian settlers, and which deprives them of an advantage which they have hitherto enjoyed over their competitors. The plain duty of the Italian Government, under the circumstances, is the abolition of the barbarous export duties. This, however, is unlikely, in view of the financial condition of Italy. Indications are that at the most only thrown silks are likely to be exempted from this tax.

Within a few weeks the result of this year's silk harvest will be known. At present writing everything points to an abundant crop. The weather has been steadily good, mulberry leaves plentiful, and it is known that more "seed" was incubated this year than last.—MILAN, *June 18, 1888.*

HENRY C. CROUCH,

Consul.

The prune crop of Servia in 1886 amounted to 300,000,000 kilograms. One-third of this quantity was dried and packed for export; the balance was consumed on the spot or made into brandy. At the beginning of the harvest the price was 20 francs per kilogram, but rose to 25 and even 30 francs.

The wine product is steadily increasing, 900,000 hectoliters being the yield in 1886. The price on the spot is about 14 francs a hectoliter, but when carried to Marseilles or Nantes the charges, freight, and duties have increased the cost to 30 francs.

RICE AND SUGAR IN SYRIA.

Rice is not grown in Palestine, and sugar is never manufactured here. Though the sugar-cane is grown in small quantities at Jaffa and Ramleh, it is simply used for chewing, and is sold for from 2 to 4 cents per cane. Along the coast of Syria, where it is more abundantly produced, and is of better quality, it retails at about 1 cent per cane.

The fertile plains of Sharon and the valley of the Jordan would produce the sugar-cane in great abundance, and its not being more largely grown and profitably manufactured is only another instance of the anomalous condition of things existing in this country.*

It is perennial here, and where once planted does not require renewal; but when cut down shoots out canes from the original stump or stock without the least cultivation. The cane grows from 5 to 10 feet in height, and "tassels" or flowers in the month of February. The canes are cut from January to March, and during that time may be found in the Jerusalem market. They are much used by the natives, but only in the way above mentioned, viz, for chewing. Used in this way it is considered wholesome and fattening, those indulging in it soon showing its effects in their improved appearance and the smoothness and delicacy of their complexion.

As there is little or no cultivation connected with the production of the cane, and as labor is cheap, the wages of the *fellah* (peasant or common laborer) being about 24 cents per diem and finding himself, sugar could be produced here at reasonable prices.

MARKET PRICES.

As to prices of rice and sugar, there is no change at different seasons, unless when the market is overstocked, when the prices decline; or when, through quarantine regulations or other cause, the market is short, when prices advance, in the case of sugar sometimes reaching 8 cents per pound, or more.

At the present time rice retails at the following prices: From England, $3\frac{1}{2}$ cents per pound; Genoa, 4 to $4\frac{1}{2}$ cents; Egyptian (red), 3 to 4 cents.

The present retail prices of sugar are as follows: White sugar, granulated or crushed (from Trieste), $5\frac{1}{4}$ cents per pound; white sugar, granulated or crushed (from Marseilles), 6 cents; brown sugar (Egyptian), 5 cents.

THE DUTY.

The import duty on both rice and sugar is 8 per cent. ad valorem. The export duty (were any exported) would be about 1 per cent. ad valorem.

As rice is not grown and sugar is not made here, as already stated, I have considered it unnecessary to enter into further details on the subject.—
JERUSALEM, PALESTINE, April 26, 1888.

HENRY GILLMAN,

Consul.

ADULTERATION OF AMERICAN LARD.

Lard in France is admitted duty free, but cotton-seed oil pays a duty of 6 francs (\$1.20) per 100 kilograms (220 pounds) on the gross weight, or about 60 cents per 100 pounds net. The law is such that if any admixture is found the duty is levied as if such admixture formed the whole. Within a fortnight several parcels of lard coming from the United States have been stopped at the Havre custom-house and will now be subjected to a careful chemical examination by competent authorities in Paris, where the samples have been forwarded to. It is said here that these proceedings of the Havre custom-house, which were preceded by a similar act at Bordeaux, and now followed also at Marseilles, are in consequence of jealous competition of some American manufacturers, who claim perfect purity for their article, whilst other refiners are said to mix up to 20 and even 40 per cent. of foreign matter, principally cotton-seed oil, the lard-oil having first been extracted. English papers lately mentioned several cases where sellers of American lard, containing cotton-seed oil, were fined £5 each. — HAVRE, FRANCE, *August 2, 1888.*

F. F. DUFAIS,
Consul.

THE MEXICAN (VERA CRUZ) RAILWAY.

[Transmitted by Consul-General Sutton. — From Mexican Financier, June 9, 1888.]

The report of the directors of the Mexican Railway for the second half of 1887 was submitted to the shareholders at the forty-sixth ordinary general meeting, held at London on the 23d ultimo. The following are the chief points: The main line is 293 miles long, with 18 miles of sidings. There has been no extension of the line since the previous report.

The following statement shows the gross earnings of the line for the half-year under review, and for the two previous half-years. The average earnings per mile per week during the three half-years were, for the second half-year of 1887, £49 0s. 8d.; for the first half-year of 1887, £47 12s. 3d.; and for the second half-year of 1886, £44 1s. 7d. — the dollar being taken for the purpose of calculation and comparison at the customary value of 4 shillings.

	1887. July to Dec.			1887. Jan. to June.			1886. July to Dec.		
	£	s.	d.	£	s.	d.	£	s.	d.
Passengers (civilian, ordinary).....	57,065	15	0	65,299	5	3	56,222	15	7
Merchandise	265,799	14	7	239,894	3	9	237,766	8	11
Pulque.....	35,375	9	3	34,582	6	11	23,750	3	4
Sundries.....	19,410	14	9	20,931	13	8	21,748	0	10
	377,651	13	7	360,707	9	7	339,487	8	8

The Jalapa line ($7\frac{3}{4}$ miles) earned in the second half-year of 1887 £11,346, as compared with £13,007 and £10,529 during the two preceding half-years. The following are the figures for each period:

	1887. July to Dec.			1887. Jan. to June.			1886. July to Dec.		
	£	s.	d.	£	s.	d.	£	s.	d.
Passengers.....	3,104	19	6	3,049	6	1	2,926	5	4
Merchandise	7,707	5	3	9,478	14	10	7,127	5	11
Sundries.....	534	7	0	470	2	11			

The sum at the disposal of the company — after payment of the interest (£60,000) on the first debenture stock — is £129,863 7s. 4d. Out of this the directors recommended the payment of the full dividend on the first-preference stock, at the rate of 8 per cent. per annum, which will absorb £102,164; this leaves a balance of £27,699 7s. 4d. available for distribution among the holders of second-preference stock, and adding the cash balance of £1,112 12s. 7d., brought forward from the previous half-year, there is thus a total to their credit of £28,811 19s. 11d. Out of this it is proposed that there shall be a dividend for the half-year at the rate of $5\frac{1}{2}$ per cent. per annum on the second-preference stock, which will absorb £27,828 18s., and leave a balance of £983 1s. 11d. to be carried forward to the credit of the holders of that stock.

The Government freight account for the half-year amounted to £1,569 12s., of which £1,346 18s. 3d. was paid by December 31, and the balance since the close of the year. The subvention was collected for the half-year under review on the scale of $1\frac{1}{2}$ per cent. of customs due. The company's share amounted to £20,213 4s. 9d., and, when loss on exchange and charges were deducted, this realized £15,616 2s. 4d. After providing for the service of the second-mortgage debenture stock (£10,660) there remains a surplus of £4,956 2s. 4d., which may be carried to the credit of the holders of first-preference stock in reduction of the amount of £13,697 16s. 5d. advanced by them. The cash balance of £2,952 15s. 1d. to the credit of first-preference stock is thereby increased to £7,908 17s. 5d., and out of this it is proposed to pay to the holders of that stock a sum equal to one-fourth per cent., which will absorb £6,385 5s., and leave a cash balance of £1,523 12s. 5d. to be carried forward to their credit, in addition to the sum of £8,741 14s. 1d. that will still remain due to them on subvention account.

A resolution will be submitted for approval, applying subvention to the full service of the second-mortgage debenture stock, sanctioning the repayment of advances according to priority of date, and authorizing the distribution of the above surplus, £4,956 2s. 4d., among the holders of first-preference stock as having made the advances earliest in date.

The increase in earnings from goods traffic, as compared with the corresponding half of 1886, was £36,360; of which £25,946 arose from foreign traffic and £10,414 from national goods. The pulque traffic was increased by 10,121 tons, yielding £11,626 additional revenue; but as regards national goods, other than pulque, although there was an increase of tonnage for export, chiefly of minerals, there was a slight reduction in the receipts, caused by a diminution in the amount of building materials carried. The receipts from passenger traffic showed scarcely any variation. The earnings of the Jalapa line showed some improvement in both passengers and goods traffic, but the Vera Cruz pier and launch expenses were increased by £3,785, an increase chiefly due to the preparations, in the shape of additional lighters and their crews, for the extension of the company's landing operations at Vera Cruz.

The working expenses of the half-year showed a weekly average of £4,968, compared with £4,950 in the previous half-year and £4,852 in the corresponding period of 1886. Six thousand five hundred pounds sterling has been added to the locomotive reserve fund; which account now stands at £25,000 available for new engines when required. The unusual severity and prolongation of the rainy season interfered with the laying of steel sleepers, and early in the half-year the bursting of a water-spout caused a serious accident and some interruption of traffic near Vera Cruz. But the damage thus done to rolling stock was found not to necessitate any very costly repairs, and, as steel sleepers were ready to be laid when the season permitted, the work was actively prosecuted in the early part of the current half-year.

The average weekly earnings for the half-year amounted to £14,367, as against £13,949 in the previous half-year and £12,915 in the corresponding half of the year 1886. The months of the current half-year (1888), as advised by tele-

and other important cities of the Republic. At the beginning of the present year the company established an agency of its own at Vera Cruz, through which goods can now be sent at rates, inclusive of all charges, from ship to station at Vera Cruz, these charges being taken at fixed amounts, varying according to the nature of the goods, and according as the goods pay or are exempt from duty. Almost at the same time the company revised its tariffs, and the new tariff—which gives an average reduction of about 20 per cent. on foreign goods—came into operation on February 1. In spite of this reduction the returns of traffic have shown an increase of receipts, instead of a diminution, the weekly average for the first four months being £15,535, as against £14,432 for the first four months of 1887. This increase may, without hesitation, be connected with the general improvement in the prosperity of the country. Trade in Mexico is steadily advancing; great success has lately attended the efforts of the Government to maintain and heighten the credit of the nation, and the increased quantity of goods which the company is now carrying is only one of many signs that the purchasing power of the community is much larger than it was some time ago. The increased quantity of goods now carried may also be taken as an indication that the company is able to face, on fairly equal terms, the forms of competition that now exist. But it is scarcely necessary to repeat what has been so often pointed out, that, as time goes on, competition may assume new forms and press more heavily on the company.

The total loss on exchange during the half-year was £57,877 19s. 10d., being an increase of £2,268 arising from the larger sum remitted. The average value of the dollar during the half-year was 37.34 pence, compared with 37.30 pence in the previous half-year. Consulting Engineer Rendel reports as follows: The line at the close of 1887 was in its usual good order, all ordinary repairs of maintenance having been executed on bridges, culverts, buildings, permanent way, and the road generally. The total length of the line now laid with steel rails is 272½ miles, of which 13½ are laid with 82-pound rails. There were also, at the end of the year, 26 miles of line laid with steel sleepers. The locomotive and rolling stock have been well maintained. Two engines—one of them a Fairlie—were condemned, provision having been made out of revenue to replace them when necessary by two engines. The pier at Vera Cruz, and the steam and cargo boats worked in connection with it, were in proper order. The Jalapa line was in its usual condition, and was equal to all the demands upon it.

AFFAIRS OF THE MEXICAN RAILWAY.

In another place we give a very full summary of the report of the directors of the Mexican (Vera Cruz) Railway Company for the second half-year of 1888, and any one taking the pains to compare this report with that of the Central Railway, recently summarized in this journal, can not fail to note that while both lines were in active competition in 1887 each road did better than had been anticipated. The only note of apprehension sounded in the report of the Mexican Railway directors is to be found in the paragraph where reference is made to some new future form of competition, evidently referring to the projected completion of the Interoceanic line from this city to Vera Cruz. That the line is able to meet the competition of the Central seems to be believed by the directors of the Mexican Railway. The fact is that both roads did a good business in 1887, owing to the improvement of general business in the country, a fact noted in both the Central's and the Mexican's report. The simple fact that the Mexican Railway earned, per mile, in 1887, £48 6s. 5½d., as against £44 1s. 7d. in the second half of 1886, indicates a satisfactory condition of business. Here was a gain of £4 4s. 10½d. per mile, and no better indication of Mexico's reviving prosperity is to be found than in this excellent gain; and the other fact, that the approximate earnings of the railway for the first quarter of the current year were £207,600, as compared with £184,200 during the corresponding period of 1887, affords additional evidence of the continuance of the improvement in trade. During the present year the Mexican Railway receives 2¼ per cent. of the total customs collections, which must offset the continued depreciation of silver, and make up, in part, for anticipated competition. It is an open

directors would encourage a policy of competition and active reaching out for new business. The line requires, though it may be difficult to convince its management of the fact, a well-organized traffic department, for if the Mexican road is to compete successfully with the American-built roads it must take example, in some respects, of American methods dominant in the Central and National managements.

FINANCE.

The recent drop in the price of bar silver, coupled with the rumors of the purpose of the company having in hand the extension of the Interoceanic Railway to the Gulf to push construction vigorously, gave the "bear" party in Mexican Railway stocks a good opportunity, and, beginning three weeks ago, they have been hammering down securities without mercy. Mexican (Vera Cruz) shares have been driven down persistently, and show no present tendency to recover. Stock, first preferred, 110½; ordinary, 38.

RICE AND SUGAR INDUSTRIES OF SIAM.

Rice is now the great staple of Siam. It has been an article of export since 1856, when the treaty with Siam, then ratified, opened up the Kingdom to foreign trade. Prior to that the laws of Siam required that a three-years' supply of rice should remain in the country before any was allowed to be shipped abroad. When this law was abolished a demand for rice sprung up, and the natives, learning that it was a cash commodity, commenced planting for export, and yearly the acreage has steadily increased, thousands of Chinamen engaging in the business. The demand for land has caused canals to be opened through sections which have lain fallow for centuries, and thousands of acres which were useless and breeders of malaria now stretch out for miles with fields of grain, billows of emerald blades greeting the eye until lost in airy undulations on the rim of the horizon. The natives use the most primitive appliances in the cultivation of their fields—breaking up the ground with buffaloes and oxen attached to a wooden plow—but the soil is so prolific that the grain grows almost spontaneously. At times the fields require irrigation, the water for which is easily obtained from the rivers and canals which cross the country in every direction. As the land is level the water rises and falls with the tide; hence, the canals require no locks, and are navigable for boats, which do all the carrying, since there are but few wagon roads, which are traversed with buffalo carts—huge, unwieldy two-wheeled vehicles.

The rice fields are laid off in lots of about one-third of an acre each—surrounded by an embankment of earth, from 18 inches to 2 feet in height, for the purpose of holding water when the land is being prepared for planting or irrigation—for which the cultivator pays to the Government a tax of 28 cents per field.

To encourage the natives to open up new fields no tax is levied on the land when it is cut with sickles and

which the straw is strewn, and over which the cattle tramp round and round until the grain is separated from the straw. Then the straw is piled up for the cattle and the grain is winnowed from the chaff and dirt in a machine, a Chinese invention of a thousand years ago. The rice for export—Kow Moong and Kow Soon—is brought to the mills at Bangkok to be hulled, and then sacked for shipping. The natives hull their rice for home consumption in wooden mortars with wooden pestles; the latter they work with their feet, though many pound it out by hand. The first steam rice-mill at Bangkok was established by an American firm, but not finding it profitable they disposed of their plant. Now the preparation of rice for market has grown into a prosperous business. The large crop this year and the increased demand has induced Messrs. Markwald & Co. and others to put electric lights into their mills, so that they can run night and day. There are now fifteen steam rice-mills in Bangkok, one in course of construction, and two at Patriew, a city 30 miles west of the capital. Most of the mills are in charge of foreign engineers. The only fuel used in these mills is the husk of the rice. Notwithstanding the country is full of rice—the last year's crop being an unusual one—the drought, which has prevailed, has dried up the water in the canals to such an extent that only a small portion has so far reached market, while thousands of piculs are spoiling in the boats which are stranded in the water-ways. The superstitious Siamese say that this is a visitation from the Deity, as their astrologers have predicted that the next year will be one of famine, and that the grain is held in the country despite the efforts of man. Having traveled over a considerable portion of central Siam, I am satisfied that it has no superior as a rice-producing and fruit-growing country, and when it is opened up with railroads and modern appliances are used to cultivate the soil the crops will be quadrupled.

VARIETIES OF RICE.

1. Na Moong, which is sown broadcast over the fields and allowed to mature without further care, and in a few years yields its annual crop in the form of wild rice.

2. Na Soon, or garden rice, is allowed to grow to a certain height and is then transplanted. This is the rice of commerce, and is the best and highest priced of all grades.

The unit of land measure is the rie, almost identical with the English land unit. The average yield per rie is 1 coyan, which contains 20 to 22 piculs, according to the quality of the rice.

The freight by steamer to Europe ranges from 33 to 55 shillings per ton. The bulk of the Siamese rice crop is exported to China. The present rate is 32 cents per picul.

Good judges estimate the daily consumption of rice by the average Siamese family to be from 1 to $1\frac{3}{4}$ cocoa-nut shells, or from 1 to $1\frac{3}{4}$ En

EXPORTS.

The exports for 1886 were 3,618,497.46 piculs, valued at \$6,542,938; for 1887, 6,662,620.50 piculs, valued at \$11,419,613; increase, 3,044,123.04 piculs, valued at \$4,876,675. The foregoing figures indicate an increase for the year 1887 of nearly 50 per cent. Total exports for 1887, \$15,593,410; rice alone being \$11,419,613.

Broken rice.—The exports of broken rice for 1886 were 55,366.92 piculs, valued at \$63,724; for 1887, 79,714.16 piculs, valued at \$79,525; increase, 24,347.24 piculs, valued at \$15,801.

Paddy (unhulled rice).—The exports of unhulled rice for 1887 were 12,048.65 piculs, valued at \$13,563.

SUGAR.

The manufacture of sugar in Siam is a ruined industry. Formerly there were large steam-mills owned by Europeans, but the export for 1887 has dwindled to 2,765 piculs, valued at \$9,768. This decrease in the manufacture and export of sugar is owing to the Government tax and to the importation of cheap sugar from China, but sugar can grow well here, and the cane is used by the natives for chewing, being cut into pieces about a foot long and sold from the street stalls. Large quantities are consumed in this manner.—BANGKOK, SIAM, *May 21, 1888.*

JACOB T. CHILD,
Consul-General.

SPECULATION IN PIG-IRON.

[Transmitted by Consul Underwood.—From Glasgow Herald, July 12, 1888.]

Although we pride ourselves on the fact that Glasgow is a city of such multifarious industries as to be now well "hedged" from the vicissitudes of fortune, it is nevertheless the fact that the prosperity of the west of Scotland has been largely founded on the iron trade and is still greatly dependent on it. A new world, indeed, was opened to us by Robert Mushet's discovery of the famous "blackband" seam of iron-stone in Lanarkshire. That was eighty-seven years ago, although the discovery was not fully utilized until thirty years later. Then followed similar "finds" in Ayrshire and Stirlingshire. The industry has been revolutionized since then, and our native ores no longer suffice for the manufacture of our domestic "pigs." When, however, an industry is firmly established in a locality it is not easy to uproot it. Of late years the iron smelters of Scotland have had to work under considerable disadvantages, and on very different terms from those which prevailed when colossal fortunes were accumulated by the iron kings. Once upon a time the iron trade of Scotland was monopolized by the Highlands, and nearly a century and a half ago the furnaces at Bonawe, on Loch Etive, and elsewhere in Argyllshire, were famous. But the industry soon began to gravitate to the Lowlands, and in 1760 were founded the Carron Iron-works, an event which may be called the beginning of the iron industry of the west of Scotland. At these works pig-iron was first made, and at these works, also, malleable iron was first made in Mushet's discovery in 1801,

Whatever view one may take of the various opinions and arguments advanced in the correspondence which has been appearing in our columns during the last week or two, the conclusion must be generally admitted that the Scotch iron trade is in very evil case. According to Mr. W. V. Jackson, its misfortunes are due to the competition of Middlesbrough manufacturers depriving Scotch manufacturers of their own markets. According to Mr. John Ferguson, they are due to the rapacity of mineral landlords who exact royalties which the trade can not afford. According to others, they are due to the animosity of foreign governments, who impose duties upon Scotch iron for the sole purpose of killing the Scotch iron trade. In a multitude of counselors it is often difficult to find wisdom, and upon the whole the unbiased reader will not find it very easy to extract the truth from the various conflicting arguments. All, however, agree in this—that the enormous stock in Connal's yards has no business to be there, and that while it is there and is still growing there is no hope of the trade reviving. This, however, exhibits but a partial knowledge of the subject. There are some brands of iron which are made only for sale, and which always go direct into consumption. There are others which seem to be made only for purposes of speculation, which seem to be adapted for no other purpose, and which go direct into the stores to be converted into "warrants." Now it is to be remembered that the warrant market is not the iron market, and that a dull and drooping market for warrants does not necessarily imply a decadence of a great industry. There is, of course, a reflex action and a considerable amount of sympathy between the two currents—that of the regular course of the trade as between producers and consumers and that of the operations of the "ring." It is conceivable, however, that the two currents may move without any relation to each other, and, as a matter of fact, "flutters" occur often in warrants when makers' iron is calm and comfortable. Still it is beyond question that a larger demand for Scotch pigs for consumption would imply not only the stoppage of the growth of Connal's stock, but also the diminution of that stock. As it is at present these million tons sit upon the market like a nightmare. They are obvious to all the world, and all the world knows that so long as that stock exists—held for the most part in hope of a rise of a shilling or two—no great enhancement of the price of Scotch pigs can ever take place. Thus it is that Scotch iron-masters may have occasion to lament the day when warrants were invented and the iron ring formed.

If there had, however, been no such institution as Connal's store, what would have happened? The iron that is held there would have been forced into consumption. Neither makers nor dealers could have borne such a weighty and ever-increasing load, and the iron would either have been sold for such prices as could have been obtained, or else it would not have been made at all. Once made it would have had to be turned into cash somehow, and if it could not take the form of a negotiable document which passes from hand to hand, and then into the custody of a bank in security of advances, it would have had to be exchanged for the bills and checks of consumers. It is clear that a quantity like a million tons of iron could not have been forced into consumption in such conditions of competition as now rule. Either sales would have been forced at such prices as would have kept Middlesbrough not only out of the Scotch market, but also out of other markets, or a number of Scotch producers would have retired from the contest long ago. Probably both things would have happened, but we must deal with things as they are, not as they might have been. Mr. Jackson's proposal is virtually one to do at one fell swoop what would have happened naturally if there had been no warrant stores; but it is now too late. The Cleveland manufacturers are in the field also, and even if we keep Cleveland iron for a time out of Scotland until we sell our own stock, that only means that a stock will accumulate at Middlesbrough instead of at Port Dundas. It matters very little in the long run whether the million tons which oppress the market are stored on the Clyde or on the Tees. The distance is short and the carriage small, but the Tees is better situated for favorable freight arrangements for some markets than the Clyde is. We are dealing with the matter as if Cleveland and Scotch pigs were of equal value and would

sary to complicate the question by considerations of quality, which, after all, in the practical judgment of the markets, come ultimately to be one of price. Still, it is worth noting here, as having a very direct bearing on Mr. Jackson's proposition, that Scotch makers have no difficulty in selling Scotch-made iron of quality similar to that of the Middlesbrough iron. This is not what is going into stock, and of really favorite brands it is probable that the general stock in makers' and dealers' hands is diminishing rather than increasing. The stock that is increasing day by day in a manner which impresses more or less every metal market in the world is the stock of that comparatively modern and extremely unmarketable quality called "G. M. B." Nobody seems to want this quality, and at any rate nobody seems to want "store iron," and thus stuff is being week by week put into the store for which there is no market, present or prospective, beyond the speculative arena of those who deal in warrants and never want to see the metal. "G. M. B." feeds the store, and the store keeps the warrant market living. The effect upon prices is deadly, and Mr. Jackson says there is no remedy but that the Scotch masters should undersell the Middlesbrough masters, so as to cut them out of Scotland completely. The reply is that that is no remedy, for the Middlesbrough masters would simply pay back the Scotch makers in their own coin. Besides, Mr. Jackson omits to make any calculation of how long it would take Scotland to absorb the million tons in store, plus what the makers are ceaselessly turning out, even if consumers would buy "G. M. B." at a price. If Scotland could not absorb it, we must remember that there would be no other markets open, for the Cleveland men would be driven to sell elsewhere at whatever prices they could get. The question of royalties has not a direct bearing upon the general question of the overloaded condition of the market. Royalties may or may not be too high, in view of the altered range of prices of all commodities, but if they are too high in Scotland they are also too high in Cleveland and elsewhere in England. A comparison of the royalties current in the respective districts is immaterial, the point of the argument being that the relative position of the competitors remains the same.

The iron problem, in short, resolves itself into two heads. There is, first, the enormous stock in public store, held, as a rule, not by makers, but by dealers and speculators. Any reduction of the royalties will not affect the price at which these million tons were produced nor the price which the present holders paid for them. That stock is costing at the rate of £100,000 per annum to hold, for store charges and interest, and it is a simple calculation to find out how long it will take to "eat its head off" at the present range of prices. Has not the head been eaten off long ago, if to the first cost of these million tons of iron be added the interest and the other charges? The cost of storing, at any rate, may be considered as lost, as far as the trade is concerned, and what the end is to be no one can tell. It is certain that this enormous stock must sooner or later come into the market on its merits. The very weight of the stock must steadily bear down prices, and a point must eventually be reached at which an iron warrant will cease to be the readily negotiable document which it now is; but the second aspect of the question is that which concerns the current make. Everybody says that Scotch iron-masters can not possibly work at a profit under existing conditions. There is a case, then, for timely and amicable concessions on the part of those who both feed and benefit by the industry. Mineral owners and railway companies may well consider whether they would not do well to reduce royalties and rates in order to assist in preserving a suffering trade. This is not, however, a case for outside interference. If those concerned in the trade can not devise means for modifying it to the altered times no one else can help them. There is clearly too much iron in the world—or, at any rate, in this part of it. The supply has enormously overrun the demand, and there will be no relief and no permanent remedy until the equilibrium is restored. This must be either by the increase of demand or the decrease of supply, *the former is the more likely.*

PEREKOP CANAL.

Russia has begun with the perforation of the strait of Perekop, which connects the Crimea with the Russian continent. The canal is to go from Perekop to Goutschar, Sivash, and Genitschesk, and is to be 111 versts long. It will be 65 feet broad and 12 feet deep — at each end of the canal a port will be built. It is stated that the 85,000,000 rubles necessary for the undertaking have been found. The shortest road from Genitschesk to the northern ports of the Black Sea will be through the new canal. The voyage from Odessa to Maripol is at present 434 sea miles long; through the canal it will be only 295. The work will take five years. Once the canal is finished, it will be easy for Russia to send her ships from the Sea of Azof to Otschakow, to the mouth of the Dnieper, and to Odessa, because they will no longer have to sail round the Crimea, and will not risk being captured by foreign ships in case of war. The chief reason for building the canal is the necessity for getting coal from the Don districts for the Russian fleet. — *London Economist*, July 14, 1888.

EGYPTIAN IMPORTS AND EXPORTS.

The sums total of financial results in the customs administration for 1887 are as follows:

Receipts	£ E. 936,941
Expenses	75,317
Net revenue.....	861,632

The cost of administration may, therefore, be placed at 8 per cent. of total revenues.

Merchandise from Turkey does not pay an import tax.

In the table presented below are imports by categories, values for 1886 and 1887, and a column showing differences between one and the other year:

Categories.	1886.	1887.	Difference between 1886 and 1887.
	£ E.	£ E.	£ E.
1. Animals and alimentary products of animals.....	177,305	237,017	+ 59,712
2. Skins and works in skins (leather).....	157,063	136,610	— 20,453
3. Other products and growths of animals.....	81,904	65,084	— 16,820
4. Cereals, vegetables, flour and vegetable products, not in other categories	683,650	480,150	— 203,500
5. Colonial commodities and drugs.....	275,614	211,433	— 64,181
6. Spirits, beverages, oils.....	560,014	538,382	— 21,632
7. Books, papers, scrap-papers.....	103,862	105,836	— 1,974
8. Woods and coals	733,095	730,645	— 2,450
9. Stones, earths, dishes and plates, glasses and crystals	182,365	178,445	— 3,920
10. Dye stuffs and colors.....	204,106	245,686	+ 41,580
11. Chemical products, medicines, and perfumeries.....	108,671	85,009	— 23,662
12. Textile products	2,233,055	2,338,212	+ 105,157
13. Metals and works in metal	554,835	978,000	+ 423,165
14. Divers articles.....	314,907	278,018	— 36,889
	6,370,446	6,608,527	+ 238,081
Tobaccos, tombacs, and cigars.....	283,275	268,003	— 15,272
Total import revenue.....	6,653,721	6,876,530	+ 222,809

A table of exports is also presented in categories and by comparison as follows:

Categories.	1886.	1887.	Difference between 1886 and 1887.
	£ E.	£ E.	£ E.
1. Animals and alimentary animal products	11,222	19,032	+ 7,810
2. Skins and works in skins	117,139	98,959	— 18,180
3. Other products and growths of animals	20,903	25,360	+ 4,457
4. Plantation commodities, drugs, tobaccos	503,906	533,608	+ 29,702
5. Spirits, beverages, oils.....	3,375	3,551	+ 176
6. Books, papers, paper-scrap.....	35,766	35,275	— 491
7. Woods and coals.....	15,718	17,191	+ 1,473
8. Stones, earths, dishes and plates, glasses, etc.....	1,768	2,145	+ 377
9. Dye stuffs and colors.....	22,117	13,728	— 8,389
10. Chemical products, medicines, and perfumeries	11,414	6,247	— 5,167
11. Textile products	7,231,721	7,654,487	+ 422,766
12. Metals and works in metal.....	82,894	143,414	+ 60,520
13. Cereals, vegetables, flour, etc	2,043,770	2,287,604	+ 243,834
14. Divers articles.....	27,907	35,816	+ 7,909
Total	10,129,620	10,876,417	+ 746,797

In category 5 is embraced sugar, which is manufactured alone by the Government on lands improved for the purpose by Ismail Pasha. These properties are under the direction of the Diara Sauich. Sugar-cane is not the only product of these lands. Cereals, cotton, and other products are reared from them, but sugar mainly. The quantity of sugar exported in 1887 exceeds by about 14,000,000 pounds that of 1886, but its market value has not been so great.

Exports of metal (category 12) were mainly in ingots of gold and silver, sent mostly to England. Such transmission in 1887 amounted to £ E. 97,412.

Receipts on tobaccos, etc., are presented below:

Articles.	1886.		1887.	
	Kilograms.	Dues.	Kilograms.	Dues.
		£ E.		£ E.
Tobaccos in leaf.....	2,603,962	260,382	2,486,598	248,672
Tombac	244,169	24,421	302,491	26,401
Chewing tobacco and snuff	33,425	3,343	27,352	2,735
Cigars.....	102,019	16,328	70,090	11,241
Total	2,983,575	304,474	2,886,531	289,049

The expenses of the customs administration for the two years have been:

For 1886	£ E. 75, 317
.....	83, 847

The customs maritime frontier extends over 1,386 kilometers. For its protection against illegal entry, the customs administration has placed at its service a force of 435 men, two steam and two sailing cruisers.

Following is one table showing the movement of money between Egypt and other countries, and another of money and merchandise:

Movement of money between Egypt and other countries during the years 1886 and 1887.

Country and year.	Importation.	Exportation.	Country and year.	Importation.	Exportation.
Great Britain :	£ E.	£ E.	Turkey :	£ E.	£ E.
1886.....	98,550	1,403,979	1886.....	457,733	825,516
1887.....	147,237	762,007	1887.....	1,107,113	295,628
France and Algiers :			Greece :		
1886.....	416,625	237,216	1886.....	8,142	.....
1887.....	1,098,967	248,419	1887.....	6,550	518
Indies :			Spain :		
1886.....	62,912	102,605	1886.....	394	26,749
1887.....	478	176,069	1887.....	.....	1,584
Austria :			Other countries :		
1886.....	51,912	4,661	1886.....	740,630	371,794
1887.....	103,423	15,227	1887.....	532,599	397,675
Italy :			Total :		
1886.....	1,769	.....	1886.....	1,838,797	2,972,520
1887.....	68,386	635	1887.....	3,066,740	1,898,062
Russia :					
1886.....	130	.....			
1887.....	1,987	.....			

Total movement of imports and exports, including merchandise and specie, during the last three years.

Country and article.	1885.	1886.	1887.
Exports :	£ E.	£ E.	E £.
Merchandise	11,424,970	10,129,620	10,876,417
Specie	1,293,660	2,972,520	1,898,062
Total exports.....	12,718,630	13,102,140	12,774,479
Imports :			
Merchandise	8,989,042	7,848,231	8,137,054
Specie	3,914,767	1,838,797	3,066,740
Total imports.....	12,903,809	9,687,028	11,203,794
Excess of exports.....	.....	3,415,112	1,570,685
Excess of imports	185,179	.....	.....

NOTE.—£ E. stands for Egyptian pound; £ E. 1 equals \$4.9641.

CAIRO, EGYPT, June 20, 1888.

JOHN CARDWELL,
U. S. Agent and Consul-General.

COMMERCE OF SERVIA.

The Belgian minister at Belgrade reports that the trade of Servia was as follows :

Year.	Imports.	Exports.
	<i>Francs.</i>	<i>Francs.</i>
1884	51,734,830	38,714,506
1885	40,472,989	37,215,299
1886	51,094,436	40,718,677

The commerce of 1886 may thus be regarded as satisfactory, above all when the political situation at the opening of the year is considered. The influence of the Servian-Bulgarian war was still felt, and many firms of the best standing had fallen, seeming to mark the beginning of a serious commercial crisis. But peace stimulated trade; the corn and wine crop were both of good average, and the exports of pork and cattle experienced no serious setback. The trade of Servia was as thus distributed :

Country.	Imports.		Exports.	
	1885.	1886.	1885.	1886.
	<i>Francs.</i>	<i>Francs.</i>	<i>Francs.</i>	<i>Francs.</i>
Austria-Hungary.....	29,949,377	36,650,159	31,911,901	35,502,736
England.....	3,404,856	4,102,967	194,360	57,024
France	194,003	2,572,627	327,238	869,543
Germany.....	2,275,787	2,042,813	54,576	35,511
America.....	527,906	1,301,252	.....	.....
Roumania.....	862,190	1,095,639	281,139	89,191
Russia.....	793,728	742,467	.....	.....
Turkey.....	510,276	740,909	3,100,339	2,619,055
Italy	1,259,110	657,144	.....	173,318
Belgium.....	15,998	489,969	.....	.....
Switzerland.....	198,983	315,796	144,950	.....
Bulgaria.....	173,450	170,147	1,045,993	830,008
Greece	210,863	161,044	.....	.....
Bosnia.....	96,462	51,503	554,803	542,291

STEAM-SHIP LINE BETWEEN PERU AND PANAMA.

On the 30th of the present month the South American Steam-ship Company (Compañia Sud-Americann de Vapores) will establish a fortnightly steamer traffic, for passengers and freight, between this port and Panama—an extension of their service from the southern ports of Chili to Callao. For many years past steam communication between Panama and Callao has been limited to the facilities offered by the Pacific Steam Navigation Company. This organization on this coast, and the relief anticipated from the last-

prejudicial. The South American Company proposes to remedy this defect by arrangements entered upon with the Pacific Mail Company, from which a more regular delivery of passengers and mail matter is confidently expected. Not only will this change be most satisfactory as regards the mail service, but also will be avoided, in a great measure, the detention of passengers for many days at such a dangerous stopping place as is the Isthmus of Panama.

The South American Steam-ship Company is a Chilean organization, based on a capital of \$3,500,000 (silver), and receives a subsidy of \$225,000 from the Government of Chili on extending the service to Panama, and for carrying the mails. By a special understanding with that Government the larger vessels belonging to the company are to be placed in the national service in the event of war. The fleet of the company numbers eighteen large steamers, measuring 33,000 tons register, and are provided with all improvements of the most modern class. The commanders are principally Americans and English, and men of recognized skill and experience. From the circumstance that this company will make special efforts towards furnishing prompt communication and passage between this coast and the United States, I have thought it advisable to call the attention of the Department to the matter, and also in the case that publicity regarding the new enterprise might be desirable. It also seems probable that from the competition certain to ensue between the two companies the present very heavy rates for passage and cargo will be sensibly reduced. — CALLAO, *June 19, 1888.*

H. M. BRENT,
Consul.

PROGRESS OF BRITISH MERCHANT SHIPPING.

[From the London Economist.]

The return which has been recently issued by the board of trade, showing the progress of the British mercantile marine, as compared with other countries, for a number of years past, contains, as usual, much interesting information. In 1887 the total tonnage of the mercantile marine of the British Empire amounted to 9,136,000 tons, being a decrease of 111,000 tons as compared with 1886. Of this tonnage, 7,296,000 tons belonged to the United Kingdom, as against 7,322,000 in 1886, showing a decrease of only 26,000 tons, so that in the shipping tonnage of the colonies, etc., there must have been a decrease of 85,000 tons. The total tonnage was divided as follows:

Country.	Sail tonnage.		Steam tonnage.	
	1887.	1886.	1887.	1886.
	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>
British Empire (including United Kingdom).....	4,726,000	4,929,000	4,410,000	4,318,000
United Kingdom.....	3,214,000	3,360,000	4,082,000	3,962,000
Total.....	7,940,000	8,289,000	8,492,000	8,280,000

From this it will be seen that while the sail tonnage of the United Kingdom has fallen off by 146,000 tons, or nearly $4\frac{1}{2}$ per cent., the steam tonnage, which is relatively many more times effective, shows a gain of 120,000 tons, or nearly $3\frac{1}{2}$ per cent. The following figures show the total tonnage of the merchant navy of the British Empire and the United Kingdom, as compared with that of the principal maritime countries of Europe and the United States, for a series of years:

Total tonnage of merchant shipping.

Country.	1886.	1883.	1880.	1870.
	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>
British Empire (including United Kingdom).....	9,246,730	9,131,420	8,447,170	7,149,130
United Kingdom.....	7,322,020	7,196,400	6,519,770	5,617,690
Germany.....	1,284,700	1,269,480	1,182,090	982,350
France.....	993,290	1,003,680	919,300	1,072,050
Italy.....	945,680	973,330	999,190	*1,012,160
Norway.....	1,524,070	1,547,190	1,518,660	1,022,510
Sweden.....	500,390	519,640	542,640	346,860
Austria-Hungary.....	261,590	280,180	290,970	329,380
Russia (excluding Finland).....	492,030	500,550	467,880	.....
Denmark.....	272,500	266,390	249,460	178,640
Holland.....	286,450	309,760	328,280	389,710
Belgium.....	86,840	86,360	75,660	30,150
United States (vessels employed in foreign trade).....	1,111,180	1,302,090	1,352,810	1,516,800

* Including small coasting vessels.

The chief feature in this table is the comparatively moderate growth in the mercantile marine of any of our competitors since, say, 1880. For instance, the shipping tonnage of the British merchant navy, between 1880 and 1886, increased by $9\frac{1}{2}$ per cent., and the tonnage of that of the United Kingdom alone by $12\frac{1}{4}$ per cent., whereas France and Germany show a gain of only 8 and $8\frac{3}{4}$ per cent., respectively. On the other hand, the United States lost ground to a decided extent. Holland also, in common with a few other continental countries, exhibits a decline. These figures show, as we have said, the total tonnage, and on turning to the steam tonnage alone we find that the character of the comparison is somewhat different. The principal figures are as follows:

Steam tonnage.

Country.	1886.	1883.	1880.	1870.
	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>
British Empire (including United Kingdom).....	4,318,150	4,013,680	2,949,280	1,202,130
United Kingdom.....	3,961,740	3,725,230	2,720,520	1,111,370
France.....	500,480	467,490	277,760	154,410
Germany.....	453,910	374,700	215,760	81,990
Italy.....	144,330	107,450	77,050	32,100
Austria-Hungary.....	90,090	76,780	62,740	49,980
Norway and Sweden.....	228,020	187,760	139,110	.....
Holland.....	108,980	101,670	64,390	19,450
United States (foreign trade).....	176,630	171,900	146,600	192,540

Here we see that while the steam tonnage of the United Kingdom increased by 1,369,000 tons, or nearly 35 per cent. between 1880 and 1886, the steam tonnage of France and Germany in-

advance should be noted, although, of course, it must be attributed to its proper cause, viz, the stimulus of the subsidies or bounties which have been granted by the state. As regards the carrying trade of the United Kingdom, it will be seen from the following statement that in 1887 a larger proportion of the foreign trade of this country was carried in British bottoms than at any previous period:

Tonnage of sailing and steam vessels engaged in foreign trade entered and cleared with cargoes and in ballast at ports in the United Kingdom.

Year.	Total tonnage entered and cleared.	Total tonnage of British vessels.	Percentage of British to total tonnage.
1887.....	65,161,000	47,950,000	73.6
1886.....	62,841,000	46,078,000	73.3
1885.....	64,282,000	46,389,000	72.2
1884.....	64,273,000	46,672,000	72.6
1883.....	64,961,000	47,039,000	72.4
1882.....	61,491,000	43,670,000	71.0
1881.....	57,949,000	41,543,000	71.7
1880.....	58,736,000	41,349,000	70.4
1875.....	46,277,000	30,944,000	66.9
1870.....	36,640,000	25,072,000	68.4

Subjoined are figures showing the proportion of foreign to total tonnage entered and cleared at the ports of the principal maritime countries in Europe and the United States:

Country.	1886.	1883.	1880.	1875.	1870.
	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
United Kingdom.....	26.7	27.6	29.6	33.1	31.6
Russia.....	90.4	92.6	88.6	90.2	88.8
Norway.....	35.5	33.4	31.8	28.9	30.0
Sweden.....	64.2	63.7	62.8	66.0	68.2
Germany.....	57.2	60.0	60.9	61.8	64.1
Holland.....	70.0	70.6	69.1	73.1	71.7
France.....	64.1	65.9	70.0	67.4	68.5
Spain.....	*61.1	62.8	73.4	66.1	63.1
Italy.....	75.7	73.9	65.2	65.8	63.5
United States.....	78.5	80.1	81.1	69.0	61.8

*1885.

From the above figures it appears that since 1880 France has carried a substantially larger portion of her foreign trade in her own bottoms, owing, of course, to the large subsidies which the state has granted. Germany and the United States also show an improvement in this respect, but most other maritime countries have lost ground, a larger portion of their trade having been carried in foreign bottoms. Exactly how we have fared in competing for the ocean-carrying trade of the world it is not easy to determine, but the figures would seem to show that, despite all efforts to the contrary, the predominant position which we have so long held has been scarcely, if at all, affected.

The figures given below do not show whether the economy in the use of labor on board ship, which was affected in so marked a degree in the years previous to 1886, has recently been carried any further, since the totals for 1886 and 1887 include for the first time the number of Lascars and Asiatics under Asiatic articles of agreement. Allowing for this, however, it appears that the proportion of men employed for 100 tons of shipping has become rather smaller in the past two years.

Statement showing proportion of men (exclusive of masters) employed to every 100 tons of British sailing and steam vessels.

Year.	Sailing ships.	Steam-vessels.	Total.
1887.....	*2.61	*3.02	*2.84
1886.....	*2.64	*3.04	*2.86
1885.....	2.74	2.77	2.76
1884.....	2.80	2.83	2.82
1883.....	2.83	2.88	2.86
1882.....	2.84	3.00	2.92
1881.....	2.87	3.09	2.97
1880.....	2.90	3.25	3.04
1875.....	3.12	3.98	3.39
1870.....	3.25	4.67	3.52

*Including Lascars, etc.

The following table shows the number of British and foreign seamen serving in British vessels employed in the home and foreign trade, and also the proportion of foreign to British seamen (masters not included):

Number of seamen.

Year.	British.	For-eigners.	Total.	Percent-age of foreign seamen.
1887.....	160,912	24,046	*184,958	14.94
1886.....	162,614	25,183	*187,797	15.49
1885.....	171,585	27,196	198,781	15.85
1884.....	171,871	27,783	199,654	16.17
1883.....	172,414	28,313	200,727	16.42
1882.....	169,920	26,017	195,937	15.31
1881.....	168,098	24,805	192,903	14.76
1880.....	169,692	23,280	192,972	13.72
1875.....	178,994	20,673	199,667	11.55
1870.....	177,951	18,011	195,962	10.10

* Exclusive of Lascars and Asiatics under Asiatic articles of agreement. Including these, the totals are, in 1866, 204,470; in 1887, 202,543.

The tonnage of vessels built in the United Kingdom during each year since 1880 has been as follows:

Year.	For home and the colonies.	*For for-eign countries.	*Total.
	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>
1887.....	306,719	70,479	377,198
1886.....	293,000	38,528	331,528
1885.....	405,386	35,626	441,012
1884.....	497,442	90,832	588,274
1883.....	768,576	123,640	892,216
1882.....	667,275	115,776	783,051
	501,184	107,694	608,878
	841	60,055	472,896

EUROPEAN FORESTRY STATISTICS.

[From L'Economiste Français, July 28, 1888. — Translation.]

Countries.	Surface of territory.	Extent of forests.	Number of inhabitants.	Wooded surface per capita.
	<i>Hectares.</i>	<i>Hectares.</i>		
Germany	54,052,200	13,900,000	45,234,000	0.37
England.....	31,495,100	1,261,000	35,247,000	0.036
Austria.....	30,002,000	9,777,000	22,144,000	0.44
Belgium.....	2,495,500	489,000	5,336,000	0.09
Denmark.....	3,956,700	190,000	1,981,000	0.09
Spain	49,724,400	8,484,000	16,350,000	0.52
France	52,840,100	9,388,000	37,672,000	0.25
Greece	6,408,800	850,000	1,980,000	0.42
Holland	3,296,800	230,000	4,061,000	0.05
Hungary	32,311,400	9,108,000	15,726,000	0.58
Italy	29,632,200	3,056,000	28,429,000	0.13
Norway	31,819,500	7,806,000	1,806,000	4.32
Portugal	8,962,600	471,000	4,160,000	0.11
Roumania.....	13,140,100	2,000,000	5,376,000	0.37
Russia in Europe.....	541,963,700	200,000,000	84,373,000	3.37
Servia.....	4,859,000	969,000	1,669,000	0.58
Switzerland	4,139,000	781,000	2,846,000	0.27
Sweden	44,281,800	17,509,000	4,566,000	3.84
Turkey, Bulgaria, Bosnia, and Herzegovina.....	33,405,200	.....	8,277,000	7.77

RESULTS OF THE OPERATION OF BERLIN SICK FUNDS.

According to an official statement published a few days ago, and referring to the results of the Berlin sick funds in operation at the close of the year 1887, not less than 63 associations, looking to the support of the sick, were in full operation in Berlin under the control and supervision of the municipality. The number of members for 1887 is given at 237,257; contributions and fees of admission, 4,000,927.92 marks; receipts from interest, 183,426.55 marks; total receipts, 4,184,354.77 marks. The expenditures amounted, within the same period, to 3,545,582 marks, viz, 1,608,215 marks for relief to sick workmen, 213,528 marks for medical treatment, 517,238 marks for medicines and the like, and 618,461 marks for nurses and attendance. Most of the members (61,991) belong to the "Allgemeine Oetſkranken-kasse" (general local sick fund for workmen without regard to trades); then follow, in importance, sick-funds unions of inn-keepers, 18,000; merchants, 13,209; machinists, 14,870; brick-layers, 18,627; tailors, 14,050; joiners, 14,450; locksmiths, 7,049; bakers, 1,244; type-printers, 4,234; girdlers, 3,875; tinsmiths, 4,378; painters, 3,545; book-binders, 3,452; turners, 3,310; hatters, 3,651; sculptors, 2,313; jewelers, 1,522; engravers, 1,182; upholsterers, 2,419; carpenters, 4,723; tin-founders, 72; barbers, 384; brewers, 991; confectioners, 747; hair-dressers, 167; furniture polishers, 640; butchers, 2,365; chimney-sweepers, 40, etc.

Fourteen works of Berlin have sick funds of their own, with 17,983 persons liable to be insured in cases of sickness; also some trade guilds have separate funds. The total number of

It is an important feature of these organizations — established in the interest of the workmen, mechanics, etc. — that membership is obligatory, and that all employés must either join independent associations or enter their names and pay a small percentage of their earnings to the organizations controlled by the municipality. The wages of the employés, of which a small percentage must be paid for the support of the organizations, are computed officially: Bakers, 3 marks per day; brewers, 3 marks; printers, 4.20 marks; cigar makers, 2.85 marks; confectioners, 2.65 marks; roofers, 3 marks; hatters, 2.80 marks; brick-layers, 3 marks, etc. The lowest are those of barbers, basket makers, varnishers, shoemakers, cloth weavers, etc., who receive 2.40 marks per day.

Of the 237,257 insured in the 63 organizations under the control of the municipality there are 175,278 males and 61,979 females — among the tailors not less than 9,850 females. Large numbers of females are likewise enumerated as employés in inns, taverns (bar-maids, etc.), hat factories, etc.

The cases of sickness in the Berlin local organizations (1887) are stated at 63,907, or 26.9 per cent., the number of days for the support of sick at 1,645,367; deaths, 2,523. The percentage of sick people is given at 27.8 per cent. for bakers, 38 for printers, 37 for machinists, 45.6 for butchers, 34.8 for blacksmiths, and 41.8 for tobacco workers. The lowest percentage is: Barbers, 17.1 per cent.; book-binders, 17.0; hair-dressers, 13.7; hatters, 13.5; photographers, 8.3; cloth shearers, 15.8; watch-makers, 10.

It is stated that, as a result of the compulsory character of insurance, nearly every employé of Berlin is actively enrolled, either as a member of the 63 local or other organizations.

Similar organizations exist in all of the large cities of the United States, though membership is not obligatory as here. The numerous public hospitals of Berlin offer great facilities for the treatment of the sick. The most eminent physicians attend the sick. The poorer classes pay no fees, while better situated persons — and it is quite customary here for sick people, high and low, rich and poor, to seek treatment at the public hospitals, either to enter them as boarders or visit them daily for treatment — have to pay for their board and treatment.

I have reported heretofore fully upon the character of the state insurance in case of accidents, etc., to which the insurance organizations for the care of the sick persons are an important auxiliary, while the subject of caring for working people of advanced age receives, also, earnest attention, and, apparently, will be realized at an early date, laws to that effect being at present under favorable consideration in the Reichstag as well as in the Prussian and other state legislatures of the German Empire. — BERLIN, July 17, 1888.

F. RAINE,
Consul-General.

MINES OF THE CHEMNITZ INDUSTRIAL DISTRICT.

The following are the official mining statistics for the year 1887 for the industrial district which is comprised chiefly within this consular district:

I. — PIT COAL.

Year.	No. of mines.	Quantity produced.	Value.
		<i>Hectoliters.</i>	<i>Marks.</i>
1872.....	12	2,850,877	3,133,692
1873.....	11	3,447,500	3,858,918
1874.....	13	3,747,265	4,107,126
1875.....	15	4,364,933	4,219,575
1876.....	16	5,188,143	4,050,150
1877.....	16	5,393,089	3,338,118
1878.....	14	5,929,153	3,298,653
1879.....	14	7,622,135	4,252,994
1880.....	13 {	8,500,462½ * 51,469	4,775,453.67 36,542.99
1881.....	13 {	9,798,453 * 64,836	5,413,300.56 43,440
1882.....	14 {	11,337,157 * 96,128	5,985,700.17 67,505.70
1883.....	14 {	12,577,674 * 100,850	7,232,987 75,640
1884.....	14 {	† 1,075,647 † 2,719	7,413,234 36,557
1885.....	14 {	† 1,087,636 † 520	8,287,323 7,265

* Coke, centners. † Tons. ‡ Coke, tons.

PRODUCT OF THE LUGAU-OELSNITZ COAL REGION FOR 1887.

The condition of the market during the year 1887 was good, and the amount of the production was increased 3.99 per cent over that of the preceding year. The amount of capital invested in these fields is 17,250,000 marks, which bore in 1887 a dividend of about 5¾ per cent.

The increased production of coal necessitated an increase in the number of men, amounting to 3.66 per cent., and wages were raised 3.1 per cent. The amount produced during the year was 1,251,767 tons, against 1,203,673.1 tons in 1886, an increase of 48,093.9 tons, or 3.99 per cent. The value of the coal mined in 1887 was 10,473,023 marks (8.36 marks per ton), against 9,263,826.54 marks (7.696 marks per ton) in the preceding year, an increase of 8.74 per cent. in the price of coal per ton. Of this output 130,250 car loads of 5,000 kilograms each were shipped from the station of Oelsnitz and 66,696 from Lugau, making a total of 196,946 car loads.

Of the fourteen mines in this district ten are the property of joint stock companies, two of mining companies, and two belong to individuals.

The entire area of these mines is 2,483.7598 hectares. The combined depth of the 28 pits belonging to these 14 mines is 14,623.7 meters, making

and the deepest 894 meters. Of the 28 pits, 26 are supplied with stationary engines. In all 141 steam-engines, representing 6,875 horse-power, are in use in these mines. Ten ventilators and sixteen compressors supply the necessary air to the miners. The air from the compressors has also been used, to a certain extent, for driving the machines in the mines.

The amount of salaries paid to engineers and salesmen was 383,476 marks, making the average salary of this class of employes 1,956.51 marks for the year 1887. The total number of workmen was 6,182. Of these, 4,661 were miners and 1,501 day laborers, 140 of the latter being women. The total wages paid was 5,344,644 marks, an average yearly income per head of 867.36 marks, or \$208.47 of our money, this being an increase of 3.1 per cent. over the wages of the preceding year. The average production per workman for the year was 203.1 tons. The casualties of the year were 9 fatally injured and 1,759 not fatally injured.

The following subordinate statistics are taken from the reports of four of the above-mentioned mines:

A. — THE GERSDORF COAL COMPANY.

	1887.	1886.	+ or — 1887.
			<i>Per cent.</i>
Total production.....hectoliters...	1,387,914	520	+ 2 or .89
Number of workmen.....	522	831.909	+ 37.88 or 4.55
Average wages.....marks...	869.794	2.6290	+ *9.08 or 3.45
Average daily wages.....marks...	2.7198	2,680	— 21.3 or .79
Production per man.....hectoliters...	2658.8	8.47	— .16 or 1.89
Daily production per man.....hectoliters...	8.31		

* Pfennigs.

At the end of the year 1887 the miners' sick fund had a balance on hand of 8,534.25 marks, while the miners' pension fund amounted to 178,876.55 marks. The entire income was 1,060,453.48 marks, and the expenses amounted to 770,430.08 marks, leaving a total profit of 290,023.40 marks.

Month.	Produced.	Sold.	Used.	Value of coal sold and used at the mines.	Average price per hectoliter.
	<i>Hectoliters</i>	<i>Hectoliters.</i>	<i>Hectoliters.</i>	<i>Marks.</i>	<i>Pfennigs.</i>
1887.					
January	125,406	109,889	10,674	95,523.09	79.23
February	115,956	101,935	9,480	87,910.65	78.90
March.....	133,986	115,613	10,870	97,570.53	77.14
April.....	99,684	87,970	9,157	93,037.72	75.20
May.....	108,966	95,151	8,942	77,904.89	74.84
June.....	108,438	93,371	9,059	76,688.68	74.87
July.....	104,040	94,600	8,788	80,744.39	78.10
August.....	113,442	100,188	9,826	86,780.55	78.88
September.....	105,060	91,810	9,122	79,566.26	78.83
	112,350	96,532	9,736	86,526.05	81.42
			11,028	112,144.39	81.59
					79.88

The preceding table shows the monthly report of business. Of the 1,218,220 hectoliters sold, 1,144,380 hectoliters were shipped by railway in 19,073 cars, and 73,840 hectoliters were carried away in wagons.

In comparison with 1886 the year 1887 shows a slight improvement, as is demonstrated by the following facts:

	Per cent.
Decrease in production.....	.42
Increase in receipts.....	6.29
Increase in average price	7.15
Increase in cost of production.....	5.74

B. — THE LUGAU-NIEDERWUERSCHNITZ COAL COMPANY.

In 1887, 937,076 hectoliters were produced by these mines, against 922,817 hectoliters in 1886, showing an increase of 14,259 hectoliters. Of the amount sold 667,680 hectoliters were shipped in 11,502 railway cars and 47,854 hectoliters in wagons, making the total sales 715,534 hectoliters, which was 76.358 per cent. of the total production. The following table shows the amounts and varieties of coal sold:

	Hectoliters.	Per cent.
Root coal.....	325,933	45.55
Lump coal.....	52,301	7.31
Washed nut coal, 1.....	46,169	6.45
Washed nut coal, 2.....	106,357	14.87
Washed nut coal, 3.....	90,500	12.65
Dust coal.....	88,372	12.35
Coal waste.....	5,017	.70
Carboniferous limestone.....	876	.12
Total.....	715,534	100

The average selling price per hectoliter in 1886 was 66.283 pfennigs, while for 1887 it has risen to 74.276 pfennigs. The receipts from the sale of coal during the year were 531,471.73 marks. To this is to be added:

	Marks.
Value of coal on hand.....	773.50
Value of coal used at the mines	11,203.25
Value of coal used at the brickyard.....	4,847.40
Other receipts.....	6,117.53
	554,413.41

The expenses were:

	Marks.
Wages, materials, etc.....	388,982.18
General expenses.....	48,599.18
Interest.....	14,337.77
Cost of coal used, etc	9,644.41
	461,563.54
Net profit.....	92,849.87

At the close of the year the miners' pension fund amounted to 188,800.51 marks, showing an increase of 4,608.72 marks. The amount paid in pensions during the year was 11,683.69 marks. At the end of the year the miners' sick fund amounted to 4,816.73 marks.

C. — THE GOTTES SEGEN COAL COMPANY OF LUGAU.

The work of these mines was somewhat embarrassed, owing to the fact that many of the younger workmen left, seeking higher wages in neighboring mines.

The coal production for 1887 was 1,299,025 hectoliters against 1,353,611 in 1886, showing a decrease of 54,586 hectoliters = 4.03 per cent. The amount sold in 1887 was 1,119,521 hectoliters, valued at 842,273.79 marks, against 1,181,502½ hectoliters, valued at 816,497.30 marks, in 1886. This shows a decrease in the amount sold of 61,981½ hectoliters, but an increase of 25,776.49 marks in the value of the coal. The value of the sold portion of the deposit remaining after washing coal was 1,735.15 marks. The average price per hectoliter of the coal which was sold, exclusive of the coal and coal deposit used on the premises, was 75.23 pfennigs in 1887 against 69.11 in 1886, showing an increase of 6.12 pfennigs. The cost of producing one hectoliter in 1887 was 56.69 pfennigs against 55.83 in 1886, showing an increase of 86 pfennigs. The cost of production, in pfennigs, is itemized thus: Wages, 36.41 = 64.23 per cent.; utensils and materials, 12.95 = 22.84 per cent.; general expenses, 5.67 = 10 per cent.; interest, etc., 1.66 = 2.93 per cent.

	Marks.
Receipts for the year 1887.....	896, 204. 60
Expenses for the year 1887.....	718, 814. 06
Gross profit.....	177, 390. 54
Improvements and repairs	60, 000. 00
Net profit	117, 390. 54

The total number of employes was 563, of whom 450 were employed under and 113 above ground. The average number of days' work done per head in 1887 was 342.3 against 336.9 in 1886; average earning of workman per day in 1887 was 2.485 marks against 2.372 in 1886; average yearly earning in 1887 was 850.31 marks against 799.13 in 1886; average daily production per man in 1887 was 6.73 hectoliters against 6.88 in 1886; average production for year 1887 was 2,303.68 hectoliters against 2,317.87 in 1886. Of the 1,299,025 hectoliters of coal produced, 702,814 hectoliters were lump coal and 596,211 hectoliters dust coal.

At the end of the year 1887 the miners' sick fund amounted to 15,689

D. — THE DEUTSCHLAND COAL COMPANY OF OELSNITZ.

The result of the year's work at these mines was very unsatisfactory, owing to frequent explosions of fire-damp, which necessitated the closing of a large part of the mines. Many of the men consequently left the works from fear, and strangers, more or less unskilled, were employed in their stead.

The increase in the number of workmen over that of the preceding year, necessitated by the work in closing several gangways and by unusual demands for repairs, was 3.54 per cent. The amount of the coal production, in comparison with 1886, sank 16.94 per cent., and the amount of sales was 26.10 per cent. less than in the preceding year. The rise in the selling price, per hectoliter, was 5.43 pfennigs, or 7.38 per cent.

On account of the unusual amount of repairs, 15.57 per cent. of the total production was used on the premises; the amount thus used in 1886 being only 7.71 per cent. The increase in the cost of producing a hectoliter was 21.16 pfennigs, an advance of 39 per cent. The average increase in wages was 5.37 per cent. Shipments by rail fell off 29.39 per cent., and local sales, 24.34 per cent., as compared with those of 1886.

Since the opening of the branch railway to the mines, on October 15, 1878, to the close of the year 1887, 73,598 car loads of coal have been shipped from these mines. The amount produced in 1885 was 977,358 hectoliters; in 1886, 1,110,990; in 1887, 922,812; amount on hand, from 1886, 1,028 hectoliters. Amount produced in 1887:

	Hectoliters.
Soot coal.....	121,323
Pitch coal.....	19,693
No. 1 lump coal.....	32,201
No. 2 lump coal.....	76,825
No. 1 chestnut coal.....	97,833
No. 2 chestnut coal.....	71,798
No. 3 chestnut coal.....	91,382
Dust coal.....	203,190
Useful wash deposit.....	73,188
Coal waste.....	129,322
Amount on hand.....	7,085
Total.....	923,840

Total amount of sales for 1887, 570,559 hectoliters, divided thus: 516,028 hectoliters = 90.44 per cent., 8,066 car loads shipped by railway; 54,531 hectoliters = 9.56 per cent., local sales; total, 570,559 hectoliters = 100 per cent., the receipts therefrom being 450,423.59 marks — 117,154.01 marks less than in 1886.

The average selling price per hectoliter was 78.94 pfennigs. The amount used for the boilers, blacksmith shop, and heating purposes was 143,685 hectoliters of coal, valued at 57,047.55 marks, making an average value of 39.70 pfennigs per hectoliter. In addition to this

1887—months.	No. of men.	Produced.	Sold.	Used.	Value of coal sold and used at the mines.	Average price per hectoliter.
		<i>Hectoliters.</i>	<i>Hectoliters.</i>	<i>Hectoliters.</i>	<i>Marks.</i>	<i>Pfennigs.</i>
January	429	82,626	50,067	16,359	42,120.41	63.41
February	408	50,904	29,802	16,355	27,680.48	59.97
March	415	51,828	25,149	18,099	26,492.00	61.25
April	429	45,504	23,757	16,008	23,276.60	58.53
May	441	59,406	35,078	17,068	31,282.80	59.98
June	437	88,014	48,842	17,746	40,285.03	60.49
July	432	85,932	57,855	17,846	48,354.75	63.87
August	452	91,854	70,739	17,789	58,994.18	66.63
September	448	79,686	57,219	18,315	49,997.77	66.19
October	529	96,114	59,495	20,529	56,129.20	70.14
November	573	100,788	61,367	21,138	59,882.81	72.58
December	584	90,156	51,189	19,621	48,830.27	68.95
	468	922,812	570,559	216,873	513,326.30	65.19

The average cost of production for the years 1886 and 1887, per hectoliter, was :

	1887.	1886.
	<i>Pfennigs.</i>	<i>Pfennigs.</i>
Wages	44.36	32.62
Materials, etc.	18.24	12.05
General expense	6.18	5.94
Interest on loans	6.66	3.67
Total	75.44	54.28

	1887. Hectoliters.	1886. Hectoliters.
Average production per man was	1,971.8	2,457.9
Average production, daily, per man was	6.06	7.64

The average number of days' work, of eight hours each, was 323.8 per miner; the average number of days' work, of twelve hours each, was 329.8 per laborer. The wages for the years 1886 and 1887 averaged as follows :

	1886.	1887.
	<i>Marks.</i>	<i>Marks.</i>
Miners	808.82	878.92
Miners	2.5552	2.7143
Day laborers	739.04	714.52
Day laborers	2.1494	2.1661
Regular laborers	787.91	839.22
Regular laborers	2.4487	2.5801

Average daily absence: Not caused by sickness, 45.9 men = 12.9 per cent. of the whole number; caused by sickness, 15.9 men = 4.5 per cent. of the whole number: total, 61.8 men = 17.4 per cent. of the whole number. At the

II. — BROWN COAL — LIGNITE AND PEAT.

A. — THE BROWN COAL STOCK COMPANY ("GLUCKAUF") AT BORNA.

The condition of this company in 1887 is represented as being satisfactory. The total production was 15,705 tons, valued at 57,166 marks. The gross sales amounted to 193,564 hectoliters, valued at 50,785.22 marks — 2,223.66 marks less than in 1886. The average price per hectoliter was 26.25 pfennigs; the average wages per day of twelve hours were: diggers, 2.64 to 3.49 marks; carriers, 2.07 to 3.09; laborers, 1.64 to 1.79.

All the workmen are insured in the miners' sick fund for Borna and vicinity. During the year seventeen persons were helped to the amount of 196 marks in all.

B. — THE "HIMMELREICH" BROWN COAL COMPANY, AT BENNDORF.

The number of workmen employed by this company was 52. The production was 16,002 tons and 7,339,000 coal bricks. Some competition was experienced on account of increased sales of Bohemian brown coal.

THE MARIENBERG SILVER COMPANY.

The total production of ore in this mine during the year 1887 was 233,103.1 kilograms, and the total production of silver 1,361.69 kilograms, valued at 148,949.25 marks. The number of men employed was 111, representing with their families 346 heads. The average wages of the miners per day of twelve hours was from 3 to 4 marks.

COAL MINING STATISTICS OF THE INDUSTRIAL DISTRICT OF CHEMNITZ FOR THE YEAR 1887.

A. — Pit coal.

Name.	No. of men employed.	Production.	
		Amount.	Value.
		<i>Tons.</i>	<i>Marks.</i>
Bockwa-Hohndorf.....	746	139,499	1,140,543
Concordia.....	336	57,174	424,156
Deutschland.....	433	73,302	515,642
Gersdorfer Coal Company.....	478	95,805	795,876
Gottes Segen.....	572	110,319	811,557
Hohndorf.....	458	100,201	788,361
Kaiser-Mine*.....	425	85,734	656,285
Lugau Coal Company.....	509	97,733	735,930
Lugau-Niederwuerschnitzer Coal Company.....	380	80,516	505,582
New Sewaldschacht.....	23	1,686	14,750
Oelsnitz.....	580	112,029	946,448
Rhenania.....	273	42,465	328,393
Count of Schönburg's mine.....	351	51,381	326,956
Vereinsglnock.....	242	39,792	296,844
Total.....	5,806	1,087,636	8,287,323

B.—Brown coal.

Name.	No. of men em- ployed.	Production.		
		Brown coal.	Coal bricks.	Value.
		<i>Tons.</i>		<i>Marks.</i>
Altengroitzsch*.....	98	40,250	7,000,000	167,500
Auferstehung.....	6	670	.....	3,015
Bärensprung.....	5	188	150,000	2,700
Berthold.....	2	104	80,000	1,240
Böttcher.....	1	149	82,000	1,465
Borna-Lobstädt.....	49	20,270	10,280,000	167,326
Belohnung.....	47	33,862	1,300,000	110,609
Crasselt.....	2	88	70,000	1,260
Frommhold.....	5	900	1,000,000	6,700
Frühmesse.....	6	1,375	1,100,000	8,800
Funke.....	1	50	.....	160
Fuhrmann.....	2	36	25,000	405
Glückauf-Blumroda.....	31	22,600	.....	65,100
Glückauf-Eschefeld.....	28	10,125	17,000	32,494
Gottes Segen.....	19	6,165	1,200,000	19,000
Gottes Helf.....	11	.....	.....	.....
Heinze.....	2	125	100,000	1,100
Hessel.....	2	253	200,000	1,730
Heinicke.....	6	1,346	1,075,000	10,750
Himmebreich.....	59	16,896	7,800,000	96,362
Hunger.....	2	95	17,600	583
Johst.....	2	115	64,500	1,186
Karthe.....	2	520	400,000	2,440
Krausse.....	6	1,503	365,000	5,768
Kretzschmar.....	5	1,085	700,000	6,795
Lägel.....	3	524	400,000	3,480
Lange.....	6	930	600,000	5,820
Lange.....	5	1,050	600,000	6,090
Marie.....	27	12,000	.....	24,000
Möhler.....	4	360	204,000	3,560
Müller.....	3	143	100,000	1,920
H. Müller.....	6	930	600,000	5,790
W. Müller.....	1	68	40,000	692
Mehnert.....	3	106	62,000	1,356
Müller-Eschefeld.....	19	207	.....	690
Rathsgrube.....	17	7,000	.....	16,000
Rössner.....	14	3,000	2,000,000	25,500
Seirig.....	3	699	400,000	3,057
Seirig (a).....	5	2,639	556,000	7,096
Seirig (b).....	2	300	250,000	1,625
Staatsfiscus.....	9	1,312	77,500	6,092
Thieme.....	21	850	2,164,000	18,702
Uhlemann.....	3	1,464	720,000	7,420
Uhlbricht.....	3	150	120,000	2,160
Werl.....	5	675	640,000	4,923
Wetzig.....	40	12,329	21,300	38,084
Total.....	598	205,506	42,580,900	898,549

* Briquettes, 21,000,000; value, 56,700 marks.

There were, also, in 1887, within the limits of this district, 51 small
 copper, tin, white arsenic.

THE PLASTERING OF WINE.

Since the production of wine in the celebrated districts has fallen off, through the ravages of phylloxera and cryptogamous diseases, the less noted wine of the central departments of France has been brought into greater requisition. These wines differ materially from the famous growths of the Bordeaux and Burgundy districts; and as they are replacing these more renowned varieties special attention is being given to them—the merchants who buy them for home use or exportation are doing their best to make them as agreeable as possible, to take the place of their illustrious neighbors. Resource is had to various chemical additions more or less injurious to health, but which serve to increase the market value of the wine. As the greater part of the army supply comes from these regions, special attention is given to their analysis. There is now being discussed before the Academy of Medicine at Paris a question of great importance to all wine merchants and exporters. The question under discussion is whether the plastering of wine is injurious to public health or not? The practice of plastering wines, or adding sulphate of lime, is very ancient; it is unknown when or where it originated, but for the last twenty-five years it has been a subject of dispute among the highest hygienic authorities—wine growers and merchants—in France. At times its use has been condemned and again permitted. Just now it is the leading question before the Academy of Medicine, being made a special subject at a number of meetings. This report is a synopsis and review of the proceedings that have taken place during the sessions of the academy on this important subject.

The sulphate of lime is added after the first fermentation, or while the wine is in the vat, and it is also mixed with the grape must. This last process has for its object the rendering soluble the different elements of the wine. The general rule is to put 500 grams to the hectoliter of wine, but the greater number of wine makers throw in the lime without weighing. The advantages said to be gained by the use of sulphate of lime are these: Fermentation is increased very much; is more rapid and complete; the color is brighter and more permanent, and the wine will keep for a much longer period. For the wholesale dealer this greatly enhances the value of the wine, but the questions to be considered are these: Does the addition of sulphate of lime in any way render wine injurious to health, and what are the chemical changes caused by this plastering? The principles, briefly stated, are these: Ordinary wine in its normal condition contains a certain amount of the bi-tartrate of potash; this readily acts on the sulphate of lime, and forms an acid sulphate of potash, and there is precipitated an insoluble bi-tartrate of

half a gram of sulphate of potash per liter. This quantity is increased from five to ten fold by the action of the lime, and at the same time the proportion of the bi-tartrate of potash diminishes to such a degree that it can be said that the lime substitutes for this salt the acid sulphate of potash. Finally, in wine treated with lime, sulphuric acid is found in a free state; also, the sulphate of magnesia. Have not these serious alterations a bad effect on the health of the consumer? It is twenty-five years since this question was propounded, and it is yet unsettled. The proprietors and wine merchants have never owned themselves vanquished. These wine dealers, wishing to reap the benefit derived from plastering wine, take advantage of the fact that chemical science has not yet given a final decision upon the subject, and medical and hygienic researches are incomplete. In brief, the commercial interests have profited wonderfully because of the difficulty found in solving this problem. This difficulty has decreased greatly, and is disappearing before chemical analysis and clinical observation. The hygienists persevere in the belief of the injurious effects of plaster, and now the Government takes hold of the matter anew, asking for the advice of the hygienic committees and the Academy of Medicine. It is the reopening of the suit formerly gained by the wine dealers. M. Marty, who was appointed by the academy to report on this subject, after defining and noting the changes that wine undergoes by the action of sulphate of lime, reviews the history of the researches and debates which have taken place on this subject. In 1856 the hygienic committee decided in favor of plastering—M. Bussy, who was appointed to report at that time, found in its favor. Nevertheless there were numerous protests. The following year numerous evil consequences resulted from the plastered wines at St. Affrique, in the department of Aveyron. The doctors state that those who drank of this wine had an unquenchable thirst (cephalalgia) and an insupportable dryness of the throat. These are only the superficial symptoms and lesions that plastered wines produce in the organism. While the hygienic committee is being occupied with this subject the Chamber of Commerce at Montpellier has charged chemists to study this practice, which is now brought under suspicion. The report of M. Bussy gave satisfaction to the wine merchants, and the work of the chemists furnished them with triumphant arguments; but, after the serious results mentioned above, the debate was reopened. In 1858 M. Poggiale, after new researches, found in the ashes of plastered wines an almost entire absence of bi-tartrate of potash, and an entirely abnormal proportion of sulphate of potash. He concluded that the practice of plastering had better be abandoned, as he considered it injurious to health. The "conseils généraux" entered into the lists after the decision given by the court at Roanne, which was against plastered wine. They demanded a new scientific

For a second time the hygienic committee, in spite of a spirited

sulphate of lime. The scientific problem took a great step in advance, deciding that plastering could not be proved inoffensive. A compromise was made, and it was conceded that plastering must be done with moderation. In 1867 the war department decided that it would tolerate 2 grams per liter; but the physicians declared that the plastered wine had a serious effect on the urinary passages. In 1879 this question was brought for the third time before the committee, who did not admit the harmlessness of plastering, but said that 2 grams per liter were not dangerous.

The inquiry made in 1884 by the minister of commerce and agriculture resulted as follows: They found in the summing up of the answers given by the departmental assemblies, the chambers of commerce, the hygienic societies, the administrations, the large proprietors, and wine merchants that they were unanimous on one point—that it is necessary to plaster moderately, and that it is best to reject for consumption all wines that contain more sulphate of potash than that fixed by law. It was stated, if wines in a normal condition only contain 60-100 of a gram of neutral sulphate of potash, it will never contain from 3 to 7 grams of acid sulphate of potash, as reported to have been found in wines that have been plastered to excess. M. Marty settles the question from a hygienic view. He reports several experiments which have been made to show the harmlessness of wine plastered to 4°. All these experiments fail for want of precision or exactness in their method. It is an incontestible fact that plastered wines have occasioned functional troubles and organic injuries; and it can not be said in truth, as those in favor of the plastering state, that no complaint has been made against plastered wine. These complaints are loud, numerous, and reiterated, and have never been silenced. All familiar with medical science know that a solution of acid sulphate of potash, in which sulphuric acid is in a free state, acts as a purgative, and a caustic in certain cases. As regards the opinion of abolishing plastering, the hygienic committee is not unanimous in their decision. It is the opinion that a moderate plastering is necessary for the utilization, preservation, and transportation of a certain class of the poorer grades of wine, whose loss would be a disastrous thing for the wine growers. But they should continue the practice, so that the proportion of acid sulphate does not exceed 2 grams per liter. This proportion is sufficient to obtain the commercial advantages for which the lime is used. In conclusion, M. Marty examines and refutes certain arguments recently produced in favor of plastering. He recognizes that the conditions of the non-combination of the neutral sulphate and the acid sulphate of potash are not well known, but we have a law furnished by nature that will guide the hygienists in the study of this question, viz, that natural wines never contain more than 65-100 of a gram of the sulphate of potash per liter. The 129 chambers of commerce that have requested the maintenance of the dose to 2 grams per liter know well that this proportion is sufficient to guard the commercial and agricultural interests. The hygienists, on their side, do not ignore the

injure public health. In conclusion, the academy gave it as its unanimous opinion that plastering wine was a custom detrimental to health, and petitions that the law of 1880 be rigorously enforced. — LIMOGES, FRANCE, *July 18, 1888.*

WALTER T. GRIFFIN,
Commercial Agent.

TRADE OF MONTE-CHRISTI.

[Transmitted by Consul Simpson.]

The town of Monte-Christi* was founded about three centuries ago, and was of some importance in the remote past, but from various inimical causes had dwindled into insignificance, when, in 1872, Mr. Juan Ysedro Jimenes, to whom its revival is directly due, established himself here. Prior to that date there was no business done here worth noting, but Mr. Jimenes soon commenced exporting mahogany, of which wood vast quantities were annually shipped hence until 1876, when the source of supply being practically exhausted the exportation of dye-woods was begun and still continues with activity.

In the opening months of 1885 the firm of J. Y. Jimenes & Co. successfully achieved, at a considerable cost, the realization of a feat of practical engineering which has proved of inestimable public benefit in many ways. Pursuant to plans drawn by Mr. P. Smith, an American engineer who supervised and carried the undertaking to a successful ending, a branch of the river Yague was caused, by means of a canal excavated at the proper point, to return to and flow through a former channel (from which it had been diverted by natural causes many years ago), discharging into the sea near Monte-Christi. By thus regulating and confining the course of this stream, hitherto dispersed in innumerable lesser water-ways and lagoons, large tracts of land formerly submerged have been drained. These lands are thickly covered with virgin forests of logwood of superior quality, which, before unapproachable, hence valueless, are now being felled and exported. The canalization of this branch of the great river of the Cibao has thus doubly benefited the dwellers in this region, affording unstinted water supply to the formerly waterless town of Monte-Christi, and imparting new vigor and prosperity to trade and to the community in general, by the redoubled activity in its chief staple of export.

Monte-Christi, at the present day, is a town of about 1,500 inhabitants, and its population continues to grow with its ever-increasing commercial importance. — Report of Mr. Grullon. — PUERTO PLATA, *July 17, 1888.*

* Monte-Christi is situated on the north side of the Island of San Domingo, about 60 miles west of Puerto Plata, and is separated from that of Hayti. Weekly mail communication is maintained between the two towns.

THE COLLAPSE OF PAPER MONEY IN PERU.

In previous communications to the Department, and especially in my report for the year ending June 30, 1887, I have touched upon the important question of paper money in Peru. This matter has assumed a new, although not unexpected, aspect within the past week, and will be productive of such results in this Republic that it may be well to furnish the Department some detailed information on the subject. In 1878 the amount of paper money in circulation, amounting to some 20,000,000 sols, and issued by the different banks at Lima, was declared to be of Government responsibility, in consideration of the remission of certain credits held against the state by those institutions. At that time the sol in paper money was nearly equal in value to that in silver. A lack of confidence in the ability of the Government to redeem the notes; the further output of paper in consequence of the necessities of the nation during the war with Chili; the gradual disappearance of coined money, which was sent abroad in large quantities, and the calamitous termination of the war, brought the value of paper as a purchasing commodity down to one-twentieth of that of silver. Nevertheless, up to within a year the absence of other circulating mediums caused the paper to be retained in that character, although the fall in its exchangeable value had brought ruin to numbers of people whose means were represented by it. Further issues were still made by the Government, and a limited amount of the notes received in payment of customs was withdrawn from circulation and burned. First, a decided disinclination was manifested in commercial circles to receive the notes of larger denominations, and a fresh supply of smaller ones was issued in order to exchange those which were rejected; but the alarm spread, and has now reached such a degree that the paper money is virtually repudiated in all business transactions not directly connected with the Government. The treasury, obliged to protect, as far as possible, the money for which the state is responsible, receives it in payment of duties in a moiety with silver. Ten per cent. of the paper thus received is handed over to an official board for incineration; the notes which are seriously deteriorated are also delivered to this board in exchange for orders for dispatch on the custom-house, and the merchants of Lima and Callao offered to receive the paper at the rate of 25 sols for 1 in silver. This last agreement has not been carried out, and at the present moment the only employment to be given to the paper money is to pay it in part for duties. But this recourse is only open to merchants and importers; the people at large, who are all holders of the rejected currency, are those who suffer to an extreme. The Government pays out the paper to its enormous list of employés; and these, to provide for their necessities, are forced to

course, the limited revenue at the disposal of the Government, almost entirely derived from the duties paid into the custom-house, is most seriously affected by this change; but being destitute of funds to even gradually redeem the paper the burden has to be endured, and it falls on a multitude. It is estimated that there were 60,000,000 paper sols in circulation, or in private hands. This sum was equivalent to 2,000,000 silver sols, and, in the course of a week, has been rendered useless, and may be considered as practically lost. Such a blow to a nation in such financial straits as Peru is to-day is hardly conceivable abroad; but when the panic began, ten days since, there were numbers of families in this city and at Lima who were actually unable to buy food with the only medium in their possession—the paper money. In the interior from Lima, in the enormous Indian population of the departments of Huanuco and Iunin, there is no silver in circulation; paper is the only money known, and when the news reaches those districts of the crisis and rejection of the paper money at the metropolis and center of the Republic it is feared that the most unfortunate results will follow. To mitigate such danger, in a measure, the Government persuaded the owners of wheat and rice in the custom-house stores to dispatch those articles, and it is proposed to send the money thus acquired (130,000 silver sols) to the departments referred to, where it may be employed in purchasing the paper from its unfortunate holders.

It is generally considered that this abrupt blow will end the existence of all paper money in Peru issued by the state, or for which the Government may become responsible. It is even doubtful whether, after such a complete collapse in a commodity which was formerly held in high value for the guaranties it rested upon, and its convenience, even the issue of a first-class bank would be regarded here with favor. The amount of silver in circulation is very limited, and the banks and commercial houses of the two cities could not to-day produce 2,000,000 of sols; but, as the necessity is now arising, the silver bars will remain here, instead of being shipped to Liverpool and Hamburg, and the mint at Lima, a reduced replica of that at Philadelphia, will find lucrative employment.

The main points to which I venture to direct the attention of the Department are the following: The unprecedented and sudden disappearance from business transactions of a large amount of money guarantied by the government of the country where the rejection occurs, and the condition of the people who remain with 60,000,000 of that money in their possession, and which the great majority of them can not employ. This transformation was effected almost without disorder—only one instance occurring where the police were attacked in Lima and were obliged to fire upon the crowd, but fortunately without fatal result. I know of no other such collapse of

MINERAL PRODUCTS OF CHILI.

Products.	1876.	1878.	1880.	1882.	1884.	1885.
Sulphate of lime.....kilograms..	46,770	600	644,911	4,311,895	1,367,700	1,868,641
Copper—						
Bars .....do.....	41,766,155	40,894,645	35,542,351	36,726,110	35,890,024	36,071,412
Regulus.....do.....	14,632,593	11,750,779	9,382,618	12,263,810	9,946,975	3,476,580
Regulus and silver.....do.....	2,025,139	2,888,032	3,062,374	3,209,773	4,973,054	3,174,462
Ore .....do.....	3,931,048	1,411,098	3,932,999	3,031,109	5,576,545	1,577,096
Ore and silver.....do.....	54,581	268,921	184,722	161,361	387,250	551,388
Manganese ore .....do.....					4,324,007	8,160,215
Saltpeter.....do.....		(?) 741,470	226,090,313	489,346,545	559,646,321	429,662,504
Iodine .....do.....			83,863	263,981	218,194	256,796
Gold.....grams.....	52,167	21,000	21,393	25,937	107,588	100,970
Silver .....do.....	34,799,737	41,148,400	84,284,115	96,631,703	66,465,597	155,616,593
Value.....					\$46,434,284	\$42,049,671

WASHING AND TREATMENT OF RAW WOOL.

The original quality of any wool may be altered beyond recognition by climatic influences; also, by carefully tending the sheep; but the general method adopted is the crossing of various breeds.

It is quite possible for the wool-grower of the present day to change a flock of sheep with long uncurled wool into a flock with short thickly-curled fleeces. So great a metamorphosis, however, can only be brought about gradually and during the course of several generations of sheep. Practically, a most extended use is made of this method of changing or improving the breed, and by means of it two principal species of wool may be grown totally differing from one another.

The variation in the character of the wool has resulted in a distinct and separate treatment and a particular manufacture being hit upon for each species, and, consequently, almost two different industries have been created, viz, the carded wool (woolen cloth) and the worsted or stuff manufactures. In the manufacture of woolen cloth, the short-curled carded wool which attains the greatest fineness of fiber is used, while for stuff manufacture long uncurled worsted wool is employed.

Raw wool, which is covered with grease, dirt, and all manner of filth to the extent of treble or four times its own weight, must undergo a thorough cleansing and scouring before it can be manufactured into cloth.

We may leave out of consideration the so-called fleece washing on the body of the sheep, by which only a small portion of the grease and dirt is removed. The actual operation of washing the raw wool is of the utmost importance, and upon its successful and thorough performance depends to a great extent the further suitableness of the wool for manufacturing purposes.

necessity to preserve the staple, by which is meant to secure an even and parallel lying of the individual fibers.

It must be clear to every thinking man that the more entirely this natural position of the fibers is preserved and the less they are entangled the less will be the tearing in after manipulations and the finer and more equal will be the yarn. The above remarks apply with the same force to combing as to carding wool, although these different qualities are treated in washing on entirely different principles, as we shall see later on.

During the process of washing in warm soap-suds and of the subsequent rinsing in soap and warm water, it is absolutely necessary to remove as far as possible, through immediate oiling and stretching, the shrinkage of the combing wool and to reduce the curling of its individual fibers to the least possible minimum. The contrary is aimed at in the treatment of carding wool. In the latter case the chief care is not only to retain the intrinsic shrinking power, but to increase it by the washing and rinsing process, and to save in every direction the flexibility of the fiber which plays so integral a part in the fullery.

The shape of the fiber of unwashed wool is to some extent an unnatural one, accurate experiments having demonstrated that its natural curling power and, in consequence, the compact roundness of its form are to some extent hindered during growth. As soon as the fiber is freed from grease by washing, the wool falls back by its own elasticity to its natural shape, and becomes really more curly than when in the grease. This propensity is of great importance in carding wool, and the more carefully it is preserved during the preparatory treatment the greater are the shrinking faculty and pulling capacity. If we would now learn what are the means to be employed for satisfying all reasonable demands for a practical wool-washing process, special consideration must be paid to the washing ingredients used, the several manipulations customary, and the various kinds of machinery by which the old-fashioned hand labor has been supplanted.

WOOL WASHING IN THE PAST.

If we look back into the past history of the woollen manufacture and examine more particularly into the nature and fashion of the wool washing practiced by our forefathers, we find as early as 1774, in a scientific journal of that date, a detailed treatise on the importance of the washing and scouring of wool (Jacobson's *Manufacture of Woollen Stuffs*). Jacobson recommends above all a thorough washing of the raw wool in lukewarm water, for if, as he observes, the water be too warm the yolk will be scorched, while if it be too cold the yolk will not dissolve. At the same time he advises an addition of urine to the scouring bath, with the express statement that soap-

This manner of treatment, however,

Some wool is taken from the urine bath and squeezed; if it swells out on the opened hand the wool is ready for the rinsing tub. Another periodical published about the same time as the above (1774), contains an article entitled "The Woolen Manufacture at Eupen," in which the application of urine in wool washing is mentioned as being in general use at that time.

A tendency soon manifested itself to improve a method of wool washing which must always have been distasteful, and the science of chemistry being still in its infancy the wildest and most absurd experiments were tried. Thus it inevitably came to pass that charlatanism found a wide field for the display of its ingenuity in this direction, and gave to the world a number of so-called washing surrogates, which, under bombastic and quack-suggesting names, hid such simple substances as soap-bark and soap-wort (*quillaya saponaria* and *gypsophila fastigiata*) mostly in the form of powder. A catalogue of these arcana of the wash-tub would take up too large a portion of our space and could serve no useful purpose in the present enlightened time.

The old method of scouring the wool with putrid urine had its undisputed merits, and the Schlieper process can alone be compared with it so far as preserving the softness of the wool is concerned. According to the Polytechnic Central Journal, of 1868, page 393, Schlieper uses a composition consisting of 20 parts of soda, 5 of oleine, and from 3 to 2 parts of ammonium-chloride. The greater quantity of ammonium-chloride is to be employed when the fiber is fine, the less quantity, however, when the fiber is coarse. The peculiar effect of this compound consists in completely preserving the softness and flexibility of the fiber, at the same time removing all greasy substances, the latter result being attributable to the presence of the oleine and the ammonium-chloride. Ammonium-chloride and soda combine to form carbonate of ammonium and chloride of sodium, together with ordinary oil-soap, and a corresponding quantity of bicarbonate of soda. The bicarbonate removes the caustic effect from the soda, while the oleine promotes the formation of an emulsion with the grease of the wool. It had already been a fact of experience that a good result could be obtained by an addition of common salt to a solution of soda. Under this treatment the driest Cape wool and the greasiest wool alike became extremely clean and brilliant, and at the same time as soft and mellow as velvet. Without risking an exaggeration this method of scouring raw wool may be safely recommended. Of course this process of washing is always a very expensive one, and it has, in consequence, been abandoned in all-wool washing establishments which work for profit. In this case all other washing ingredients have given place to soda, by the careful use of which—more particularly of ammoniacal soda (solway soda), which has lately been manufactured by most superior processes—very satisfactory results are obtainable.

Singularly enough, Joclét, in his little work, "The Chemical Treatment of Sheep Wool," recommends caustic soda as being specially adaptable for scouring wool, owing to the more energetic effect of

that carbonate of soda not only saponifies the yolk, but operates in a very destructive manner on the wool fiber. For this reason caustic soda must be regarded as the least satisfactory preparation for wool washing. Joclét adds, moreover, that competent professional experts have abandoned the use of caustic soda, because it gives to the wool a yellowish tint and deprives it of its flexibility and its so-called "grip," but he declares that the injurious effect of this agent can be neutralized by adding to it a solution of ammonia. As, however, ammonia, or rather in this case spirits of sal ammoniac, is likewise a caustic of kali, it is incomprehensible by what manner of means the caustic soda can thus be deprived of its destructive properties.

Grotte says on this subject: The qualities of soda used in wool scouring are by no means uniform in respect of pureness. Above all things, this soda must be free from any particle of caustic soda, because the latter has a decomposing influence on the fiber of the wool. Schapringer describes, in the "German Industrial Journal," for 1868, page 183, a process by which any caustic soda, casually present, is rendered harmless by being converted simultaneously into bicarbonate and sesquicarbonate of soda. To a bath containing 300 parts of water and 1 part of soda a quantity of sulphuric acid (ten-fold diluted), an equal to about 3 to 6 per cent. of the quantity of soda, is added. Carbonic acid is thus given, which rapidly forms an emulsion with the yolk, without in the least affecting the fiber.

Considerable saving of time and labor, however, is effected when it becomes unnecessary to resort to such means as above described, by using a soda entirely free from all caustics. Such a soda is the above-mentioned ammoniac soda, which may be considered an almost pure chemical product, as it contains from 98 to 99 per cent. carbonate of soda.

Equally important as the exact quantity and quality of soda used is the right temperature of the scouring bath. For the former no rules can be laid down, and in the case of the temperature it is just as impossible to give exact directions to meet all contingencies. Generally speaking, a heat of 40–50° R. is the average temperature necessary for a scouring bath, and as the difference between these two figures is considerable, it is obvious that the exact point can only be hit upon by practice. The same must be said of the length of time during which the wool must remain in the bath. In this respect the washer must be guided in a great measure by the quality of the wool to be washed.

When the scouring process, or the solution and saponification of the wool grease is accomplished, and the wool taken out of the scouring bath, it must thoroughly be rinsed. This is done in a bath of clear lukewarm soap-water in the case of combing wool, as we have already stated, while carding wool must be rinsed in cold river water. The low temperature of the rinsing

every expert washer will corroborate the fact that during the summer months a total elimination of grease by washing is impossible. It may be, however, that through immediate rinsing in ice-cold water the dissolved resin-like greasy substance quickly coagulates, and is thus more easily separated from the wool."

In connection with the above we must add that, although many woolen manufacturers are so comfortably situated as to be able to wash their wool supply during the winter and desist from summer washing altogether, such a plan can not be adopted as a rule, or be carried out under all circumstances. Washers and dyers are, by occupation, compelled to wash all the year round, even during the hottest season, whereby they run the risk of supplying wool which is not entirely free from grease. The most extraordinary tricks are then resorted to, with varying success, for obtaining a satisfactory result. For instance, when the temperature of the river or other rinsing water rises to 15° R. the calamity begins, for the well-scoured wool comes out of the rinsing machine in a sticky, muddy, and uncomely condition, and the higher the temperature of the water rises the greater is the resultant evil. In such a dilemma the following treatment has always been found successful: The temperature of the water in the scouring basin is raised to 50-54° R., and the bath itself is kept fairly "strong," only a very small portion of the wool, say a quarter of the quantity to be washed, being soaked in it. After five minutes, at the most, the wool is taken out of the bath and quickly rinsed under a very strong stream of cold water. To put the matter in a nutshell we may say that the following points should be paid attention to in the hot season: High temperature, a strong bath, short soaking of small quantities of wool, and quick rinsing in plenty of water. Forced as this treatment of the wool may appear, its results have never been bad. The wool always dyes well without losing its color, the whole dyeing process remaining unaffected and satisfactory.

Having fully discussed the subject of wool-scouring and washing ingredients, we may consider now more closely the mechanical arrangements which are employed in wool scouring.

From the primitive process of washing by hand, which is still in vogue in minor business establishments, to the "Leviathan," the most complete washing-machine of the present time, is a mighty step, and yet the progress which these two extremes represent has been the work of a comparatively short space of time. The first experiments in the construction of wool-washing machinery date back to the last century, but were more or less ineffectual until 1830, when the epoch-making inventions in this sphere of industry commenced.

The first really useful washing and scouring machine, of which an idea may be gained from the diagram (Fig. 1) below, was constructed in 1832 by Sehlmacher. In this invention the rinsing-rake, which was formerly operated by hand, was set in motion by a crank, while the rinsing

water necessary was conducted through pipes into the rinsing or scouring machine, out of which it runs, after being used, without any assistance.

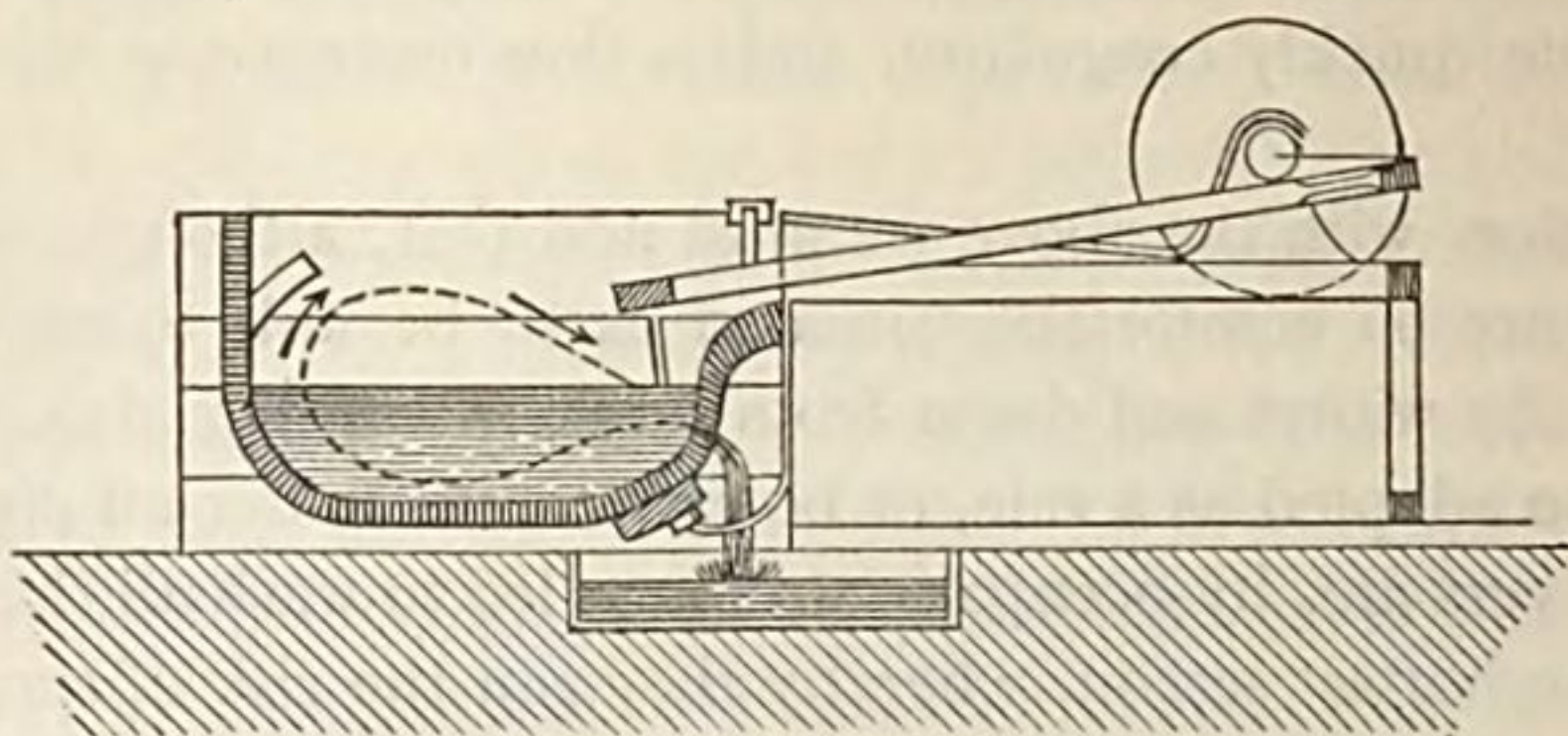


Fig. 1.

A much more perfect washing-machine was built by Peltzer about the year 1855 (see Figs. 2 and 3). On the top of an elliptically-shaped vessel are two paddle-wheels with curved hooks, by which the wool, rotating with the water around the axis of the machine, is submered. There are many modifications of the original idea. One inventor makes use of flying pinions, another of rakes, a third of paddle-wheels on one side and rakes on the other, etc., each claiming special advantages for his construction.

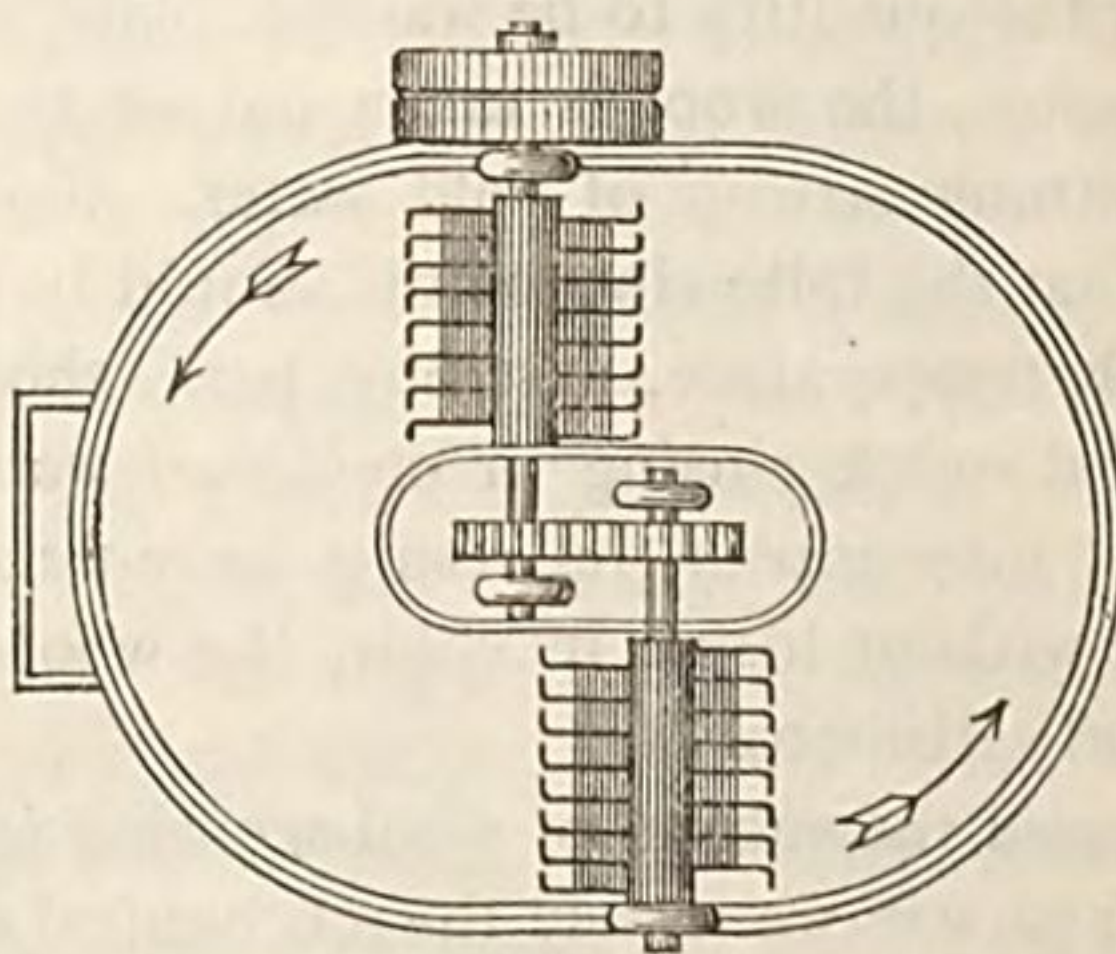
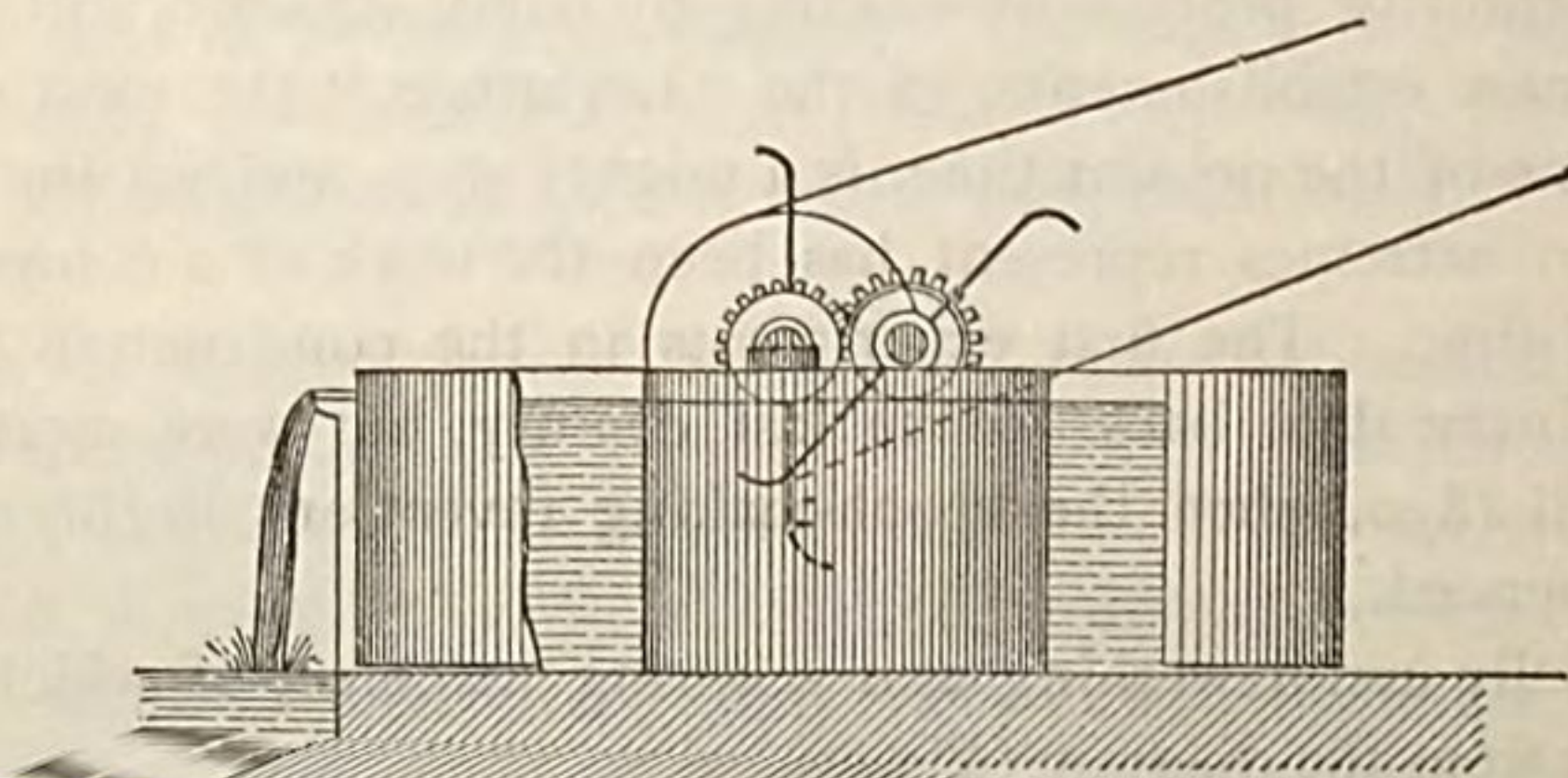


Fig. 2.



flyng wheel is sufficient. For this purpose he lets the supply-pipe enter the side wall of the washing-machine about 8 inches above the bottom of the vessel, just opposite the flyng wheel, as may be seen in the sketch below (Fig. 4). The stronger the supply of water the greater is the water pressure from the reservoir, and consequently the more effective is the rotation of the water in the washing-machine. Thus not only considerable power is saved, but the wool is only treated by one flyer and the current of the water, and a superior mellowness in the wool is obtained.

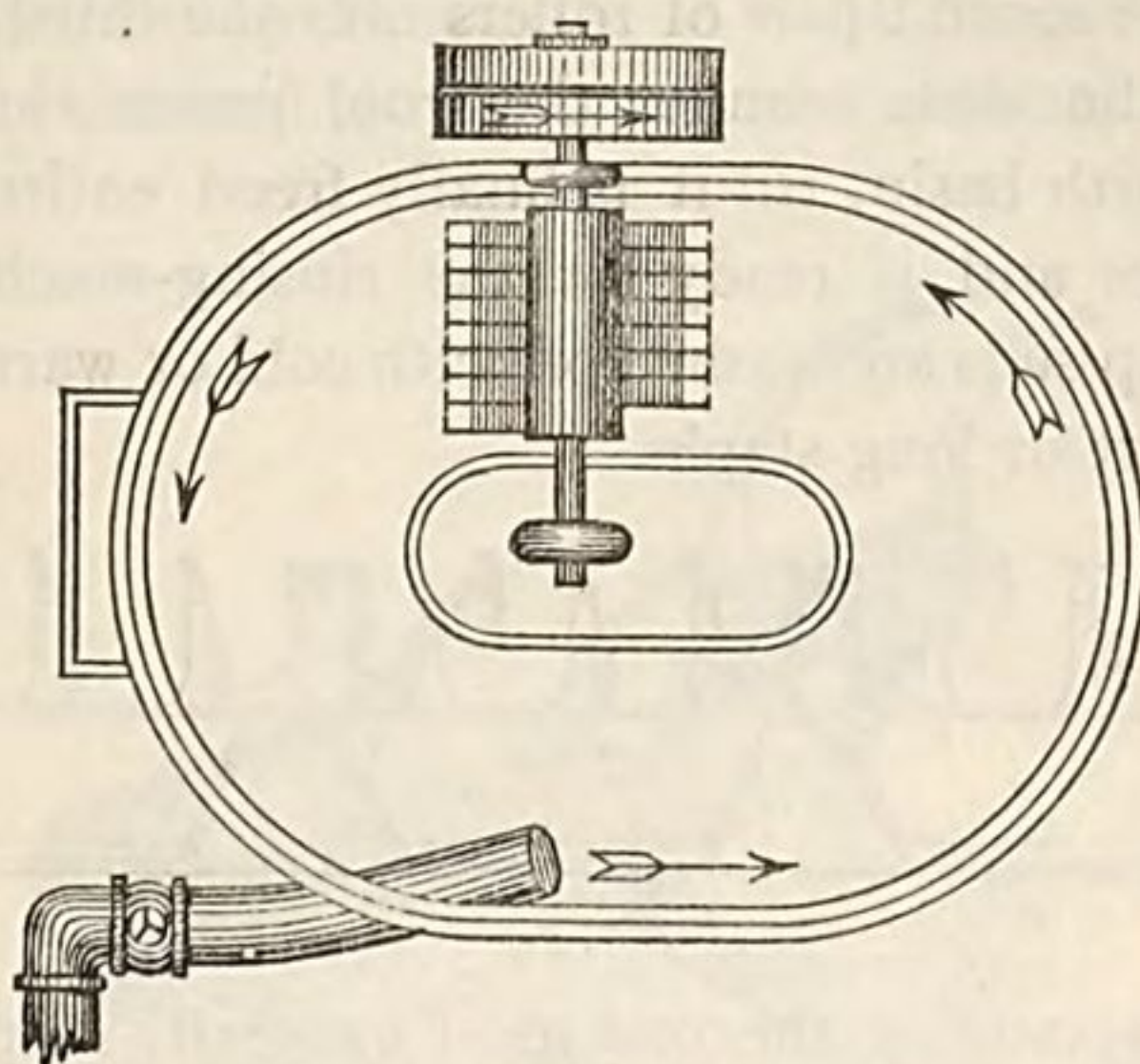


Fig. 4.

Even the long-fibered Buenos Ayres wool does not become entangled, though formerly it happened only too often that long wool twisted into lengthy braids. The system may not be applicable in every case, but it will answer very well where the water runs into the waste basin at considerable pressure. The stronger the rush of water the less wool needs to be turned in the washing-machine, and the less danger there is of the individual fibers becoming twisted and entangled.

Since the scouring of so-called smut-wool (wool not washed on the body of the sheep before shearing) has been commenced, the whole method of wool washing has had to be changed. In most cases the ends of the fibers in the unwashed state are covered with grease and dirt to such a degree that a mere soaking of the wool in wash-lye is not sufficient to dissolve the same. To accomplish this a procedure has been devised by which the soaked wool passes between solid rollers, which are pressed together by strong springs or levers, before it goes into the rinsing-machine.

Although good progress had been made in loosening the greasy staple through this squeezing process, which is still resorted to in small woolen mills, many improvements had to be introduced before the desired result was gained. A repeated soaking in fresh water and a second pressing between the rollers produced a more favorable result, so that by degrees the present "Leviathan" machine, a combination of soaking vessels and squeezing

The construction of the "Leviathan" and its treatment of wool is as follows: The first square soaking vessel receives the raw wool, which remains a greater or less time, according to its quality in warm water or weak lye. After the wool has soaked long enough the spreader or elevator is set in motion, raising the wool on the first endless lath-table, which conveys it to the first pair of rollers. Immediately behind this pair of rollers is the second soaking basin, into which the squeezed wool falls, and having gone through a second washing is carried, by means of iron hooks, through the washing bath to the front part of the basin. Here the second elevator is waiting for the wool, which it carries through the second pair of rollers into the third basin filled with a fresh lye-bath. In the same manner the wool passes through a third and, in some cases, a fourth basin, till it is finally freed entirely from all greasy and sticky substances and is ready for the rinsing-machine, in which the adhering lye and soap-suds are washed off with cold or warm water, according as the wool is of short or long staple.

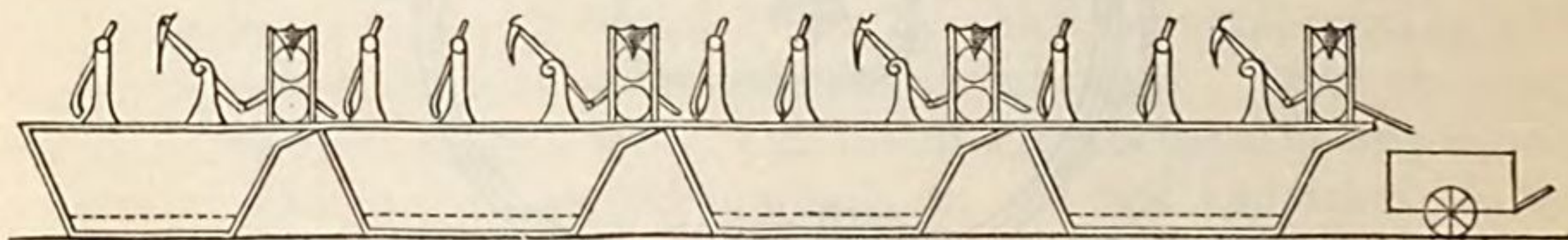


Fig. 5.

The three-basin system is the one most generally employed and is sufficient for all practical purposes. Leviathans, however, with two and even four basins, are also employed. The strength and method of preparing the scouring lye depends entirely on the nature of the wool. It is quite impossible to conduct the washing of the wool on any fixed plan or system. Favorable results can only be obtained by practical experience. Buenos Ayres wool, for instance, is generally treated with a bath of the following compounds: In the first basin the wool is soaked in lukewarm water without any washing ingredients, on account of the fact that all wool sheared in the grease contains, as a rule, potash enough to saponify the greatest portion of the animal grease. In the second, third, and, eventually, fourth basins soda, urine, or soap is added in such quantities as may be required by the character of the wool, in order that it may be freed from the last remnant of grease and dirt in passing through the rollers.

The real inventor of this automatic washing-machine and its systematic combination we must undoubtedly consider Eugène Melen, of Verviers, who took out a patent for the first "Leviathan" on the 14th day of April, 1863. In the course of time the original motory mechanism has undergone various modifications and improvements, the principal aim always kept in view being to save as much as possible the staple of the wool. Owing to the quiet and steady motion of the hooks and rakes which carry the wool through the bath

The elevator, however

When the wool, which is passed through the basin as slowly as possible, reaches the elevator, it is suddenly jerked out of the water by the ladles of the latter. A part of the wool thus caught up often slides down again from the ladles into the whirlpool, which their violent motion causes to be again seized and drawn out upon the endless latticed conductor. As this lifting out and sliding back again of the wool repeats itself more or less frequently, the danger of twisting and knotting is very great. To obviate this whirlpool caused in the washing fluid, and the falling back of the wool from the elevator, the most varied means have been assayed. The best system was that displayed in the operation by Messrs. F. & N. McNaughten, of Rochdale, in their "Leviathan," exhibited at the International Wool Exhibition in London in 1881.

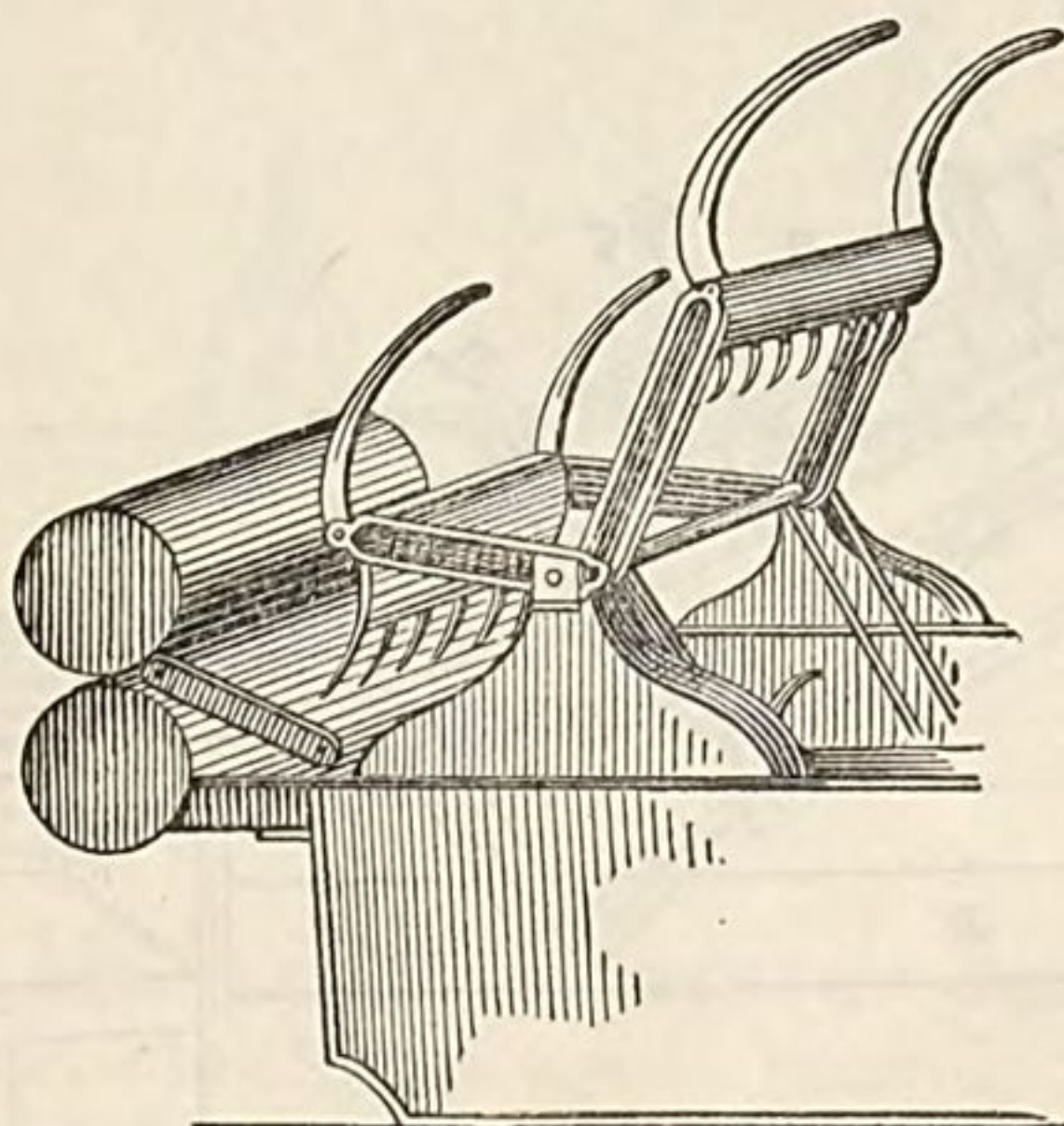


Fig. 6.

The form and arrangement of this "Leviathan" were the generally known ones; new and peculiar, however, was the lifting apparatus (see Fig. 7), which was constructed as follows: Over an obliquely-lying polished glass plate *G*, reaching from the sieve-bottom of the basin to the rollers and falling off in an obtuse angle towards the same, were two rake-shaped frames *A* and *B*, the single shafts of which were placed side by side in alternate order. These shafts were provided with metal prongs which reached almost to the glass plate, and were united by short connecting rods with the diagonal rods *p* and *q*, which in their turn connected upright, placed side by side with sliding pieces *S S'* arranged further below under the glass plate. The latter lay close to the eccentric rods *e e'*, in alternate order, and were raised and lowered by the latter and by the rake-shaped frames. The eccentric rods were placed upon symmetrically turning shafts. The sliding pieces *S S'* were connected by means of guiding rods *I I* with the oscillating lever *H*, so that the latter, together with the frame, preserved an oscillating motion.

The shape of the eccentric rods kept the frames, by means of close and half-rotation alike, in the lowest and the highest position, while the taking off and letting down of the wool was effected by the lever *H*.

When the frame was in its lowest position the wool was shifted upwards along the glass plate; in their highest position the frames moved out downwards far below the plate. The effect is therefore easily understood. The last rake conveyed the wool towards the frames, the sinking frame pierced the wool with its prongs and (in the lowest position) forced it along the glass plate in an upward direction, and while throwing off the wool the other frame returned in the meanwhile to commence the same operation over again. At the upper end of the glass plate *G* the wool was thrown over the edge and fell along the second glass plate *G*, towards the squeezing cylinders, whence the wool was either carried into a second basin or thrown by a flap-roller from the lower press cylinder to accumulate on the floor.

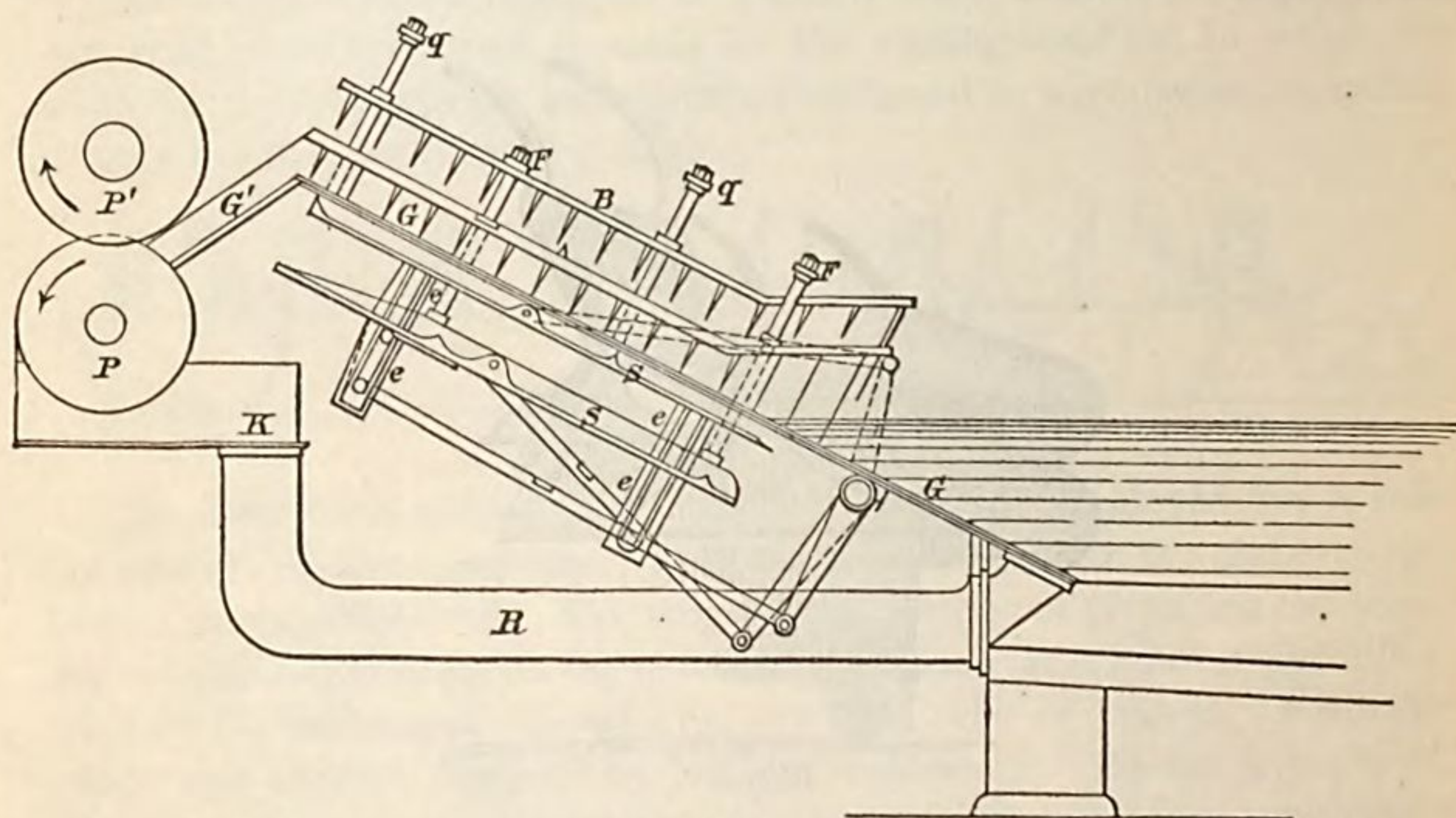


Fig. 7.

The working of this machine was very exact, the velocity of the rollers as also of the frames and rakes being moderate, a favorable augury for the preservation of the staple. By the use of the glass plate all friction in lifting out and, consequently, the knotting of the wool were avoided, and the wool came light and open to the press-cylinder. The lifting apparatus was simply contrived and worked well.

In the "Leviathan," so far as it is adaptable for scouring purposes, we have an almost perfect washing-machine. In connection with the "Leviathan" a cold-water rinsing-machine is often seen, the motory mechanism of which is similar to that of the scouring basin, only that the velocity is much greater. While, as before stated, the whole scouring process is performed with a certain easiness and tranquility, and the carrying forward of the wool takes place with the utmost precaution and care to prevent the slightest entanglement of

ten, and often more minutes in the direction indicated by arrows in Fig. 8, and is submitted to continual tearing and entanglement until the elevator is finally inserted to haul out the perfectly rinsed wool. Now, however, the damage to the wool begins in real earnest. A general obstruction commences—the elevator once set in motion, having stopped the circular motion of the wool, the rakes work briskly ahead and entangle everything which is reached by the iron hooks. The idea of a uniform and steadily-working machine may have been the prevailing one, but unfortunately the work accomplished falls far behind what was expected of it.

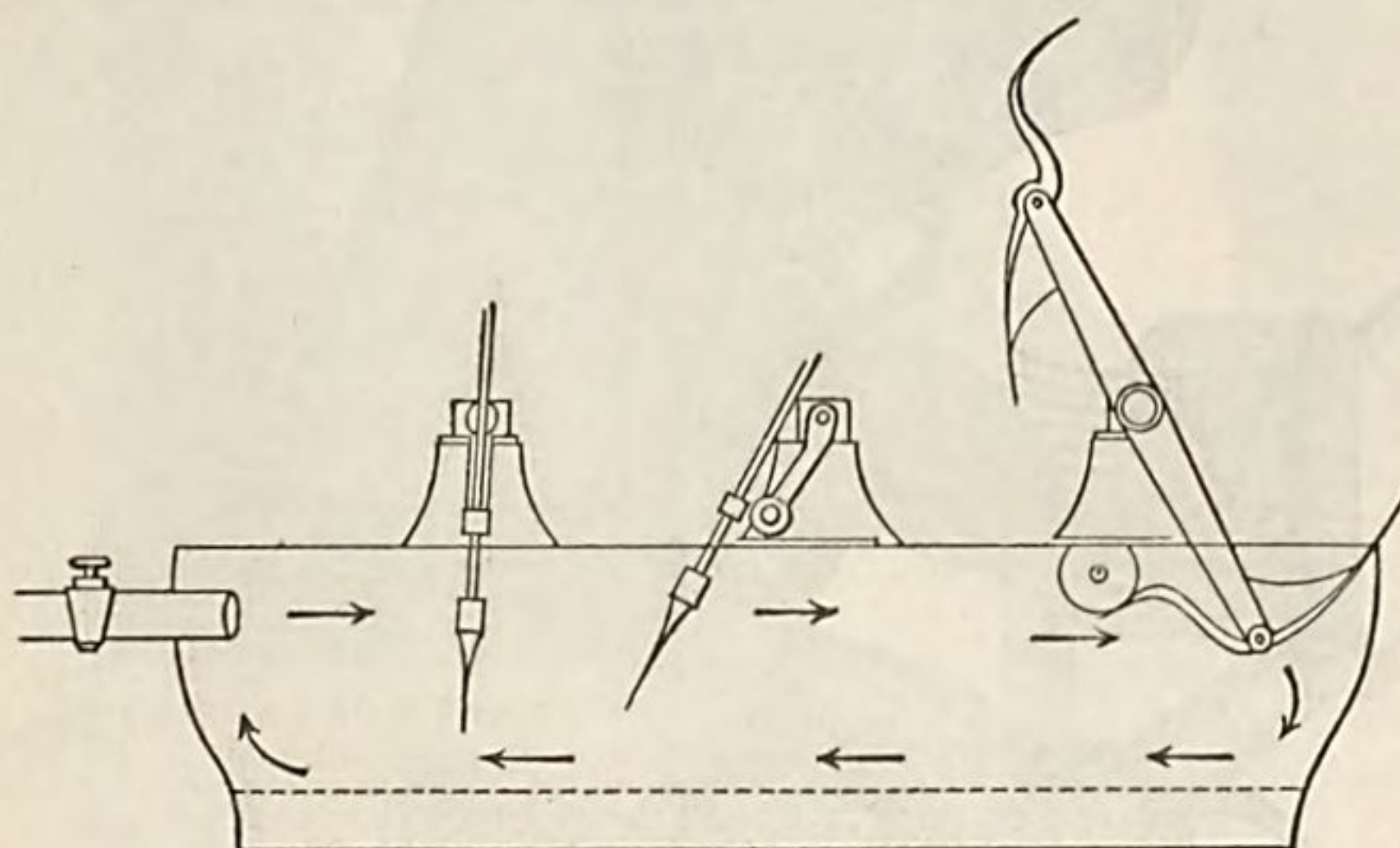
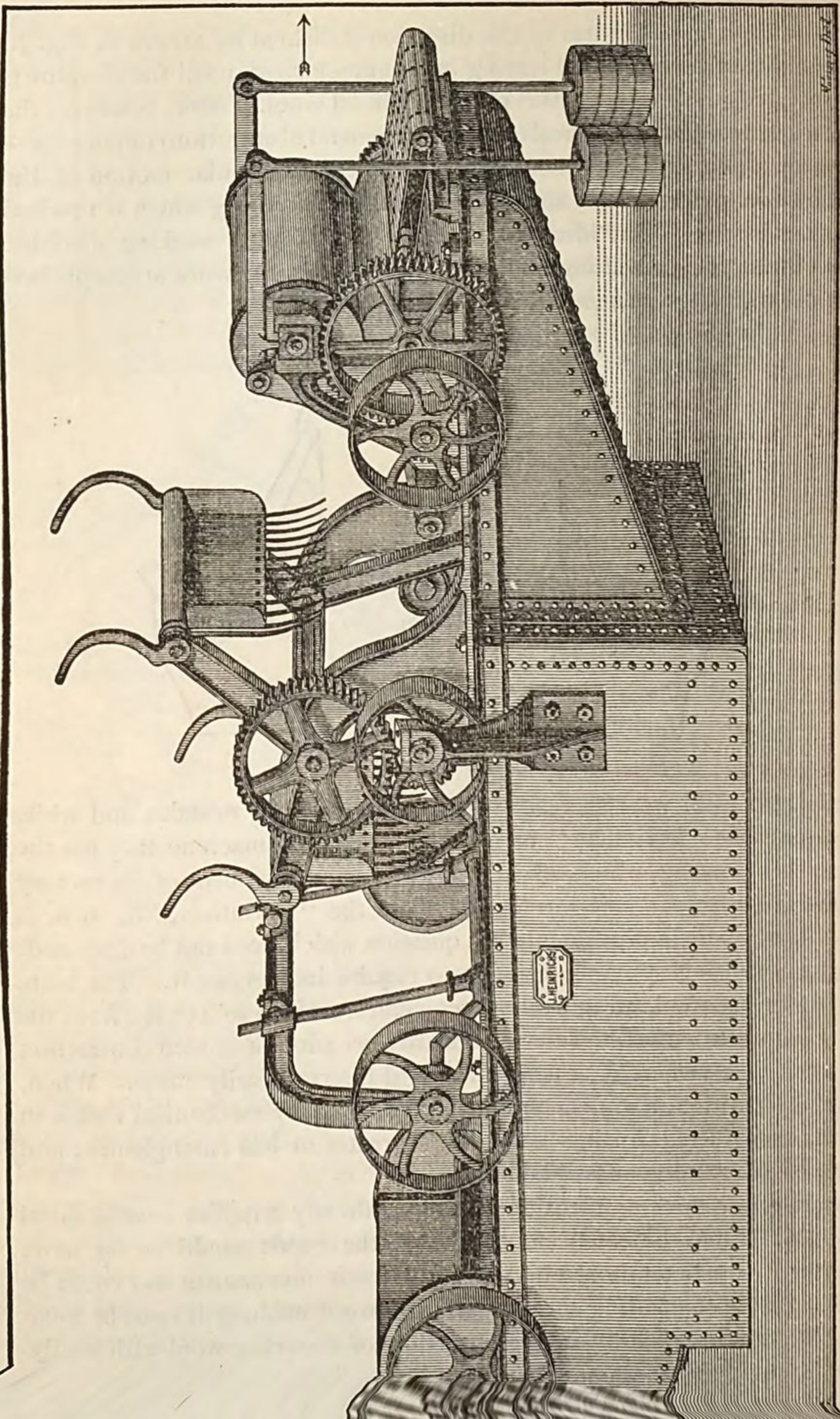


Fig. 8.

Intelligent wool washers readily appreciate the clear mistake, and while they employ the “Leviathan” as a superior scouring-machine they use the “Peltzer” for rinsing, which, on account of the arrangement of its motory mechanism, gives a far superior result. That the “Leviathan,” as such, is susceptible of many improvements is a question which need not be discussed. The present rinsing system is the first to require improvement. The mere conveying of the wool, at an average temperature of 40 to 45° R., from the scouring bath into very cold water, necessarily occasions a sudden contraction of the wool fibers, whereby entanglement and filtering easily ensue. When, however, in addition, a violent motion is produced by mechanical means in elliptically-constructed rinsing-machines, a greater or less entanglement and knotting of the wool is unavoidable.

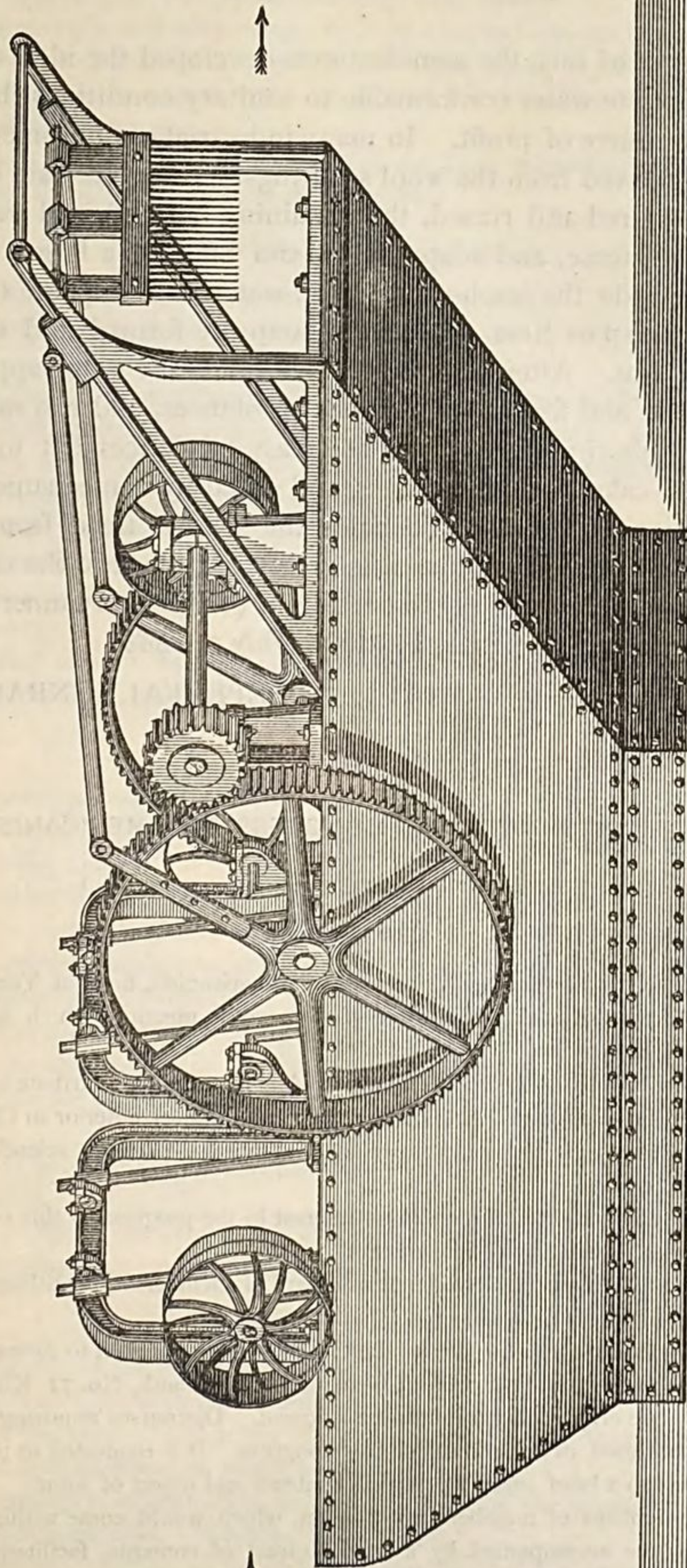
The one-flyer system, mentioned above, already supplies a substantial remedy, and it may be safely accepted that the result would be far more satisfactory if a sufficiently strong current without mechanical aid could be applied. Before concluding these remarks on wool washing it must be mentioned that all experiments in the direction of scouring wool with easily-volatile, grease-dissolving compounds have ended in practical failure.

As the industry progressed it became necessary to ascertain, in the sanitary interests of the community, how it could be made possible to purify the



BAC DE LÉVIATHAN, 2 OU 3 BACS FORMENT UN LÉVIATHAN.

laine passe mécaniquement d'un bac au suivant. Grandeur suivant quantité de laines à laver. — Atelier de construction de Jos. Heinrichs, Hodimont-Verviers.



RINCEUSE DE LAINE FAISANT SUITE AU LÉVIATHAN.
 a laine sort de ce bac mécaniquement. Se construit également de plusieurs grandeurs et systèmes. — Atelier de construction de Jos, Heinrichs, Hodimont-Verviers.

rivers. In some cases industrial establishments have been compelled, by protests raised in the neighborhood or by official acts, to cleanse their waste water.

In consequence of this, the manufacturers developed the idea, not only of rendering their waste water conformable to sanitary conditions, but of converting it into a source of profit. In many industrial establishments considerable profit is derived from the wool scourings. After a certain quantity of wool has been scoured and rinsed, the remaining hot and cold water, which contains potash, grease, and soap-suds, is run off into a large, water-tight vessel placed outside the wash-room; lime-water and sulphate of lime are added, whereby soap of lime and ferrous soap are formed and sink to the bottom of the basin. After standing twelve hours the water appears at the top perfectly clear and free of all noxious substances, and can safely be run off into the neighboring streams. The greasy substances left in the vessel are formed into cakes in filter-presses and dried by a mechanical process. By the application of benzine and acids the soap is freed from the lime, ferrous compounds, while the remaining grease is utilized in the manufacture of wool-wax, stearine, paraffine, oleine, degreas (oil used in tanneries for chamoising), illuminating gas, etc.—BARMEN, *July 7, 1888.*

JOSEPH FALKENBACH,
Consul.

SEVENTH INTERNATIONAL CONGRESS OF AMERICANISTS.

[Transmitted by Consul-General Raine—translation.]

PROGRAM.

By a resolution of the International Congress of Americanists, held at Turin, Italy, September, 1886, Berlin was selected as the place of the seventh meeting, which is to take place from October 2 to 5 in this city.

It is the object of the International Congress of Americanists to contribute to the progress of scientific studies in relation to America, specially to the times anterior to Christopher Columbus; its chief purpose is to promote personal intercourse between scientists who make such study a special object.

Membership is allowed to all who take an interest in the progress of this study by an annual fee of 10 marks (about \$2.38) per annum.

The receipt of the treasurer is considered as a card of membership, entitling such member to the publications of the congress.

Gentlemen who desire to participate in the Congress are requested to forward the amount as soon as possible to the treasurer, Consul-General W. Schinlauck, No. 71 Köpnicker street.

For each discourse only twenty minutes are allowed. Discourses requiring more time for delivery can be published in the reports of the Congress. It is requested to limit discourses during the meetings to a brief summary, stating contents and object of same.

~~... persons not present, which would come within the reach of~~

notify the secretary-general by the 15th of September, so that proper notice of their intention can be published in the program of the meetings. Lecturers are earnestly desired not to read their discourses, but state orally and briefly their contents.

Books, manuscripts, and other objects dedicated to the Congress become the property of scientific institutions in Berlin; the final decision regarding the distribution of such presents among the institutions is subject to the decision of the committee of organization after the adjournment of the meetings.

In agreement with the board of managers of the Turin meetings the committee of organization proposes the following subjects for discussion:

Geography, history, and geology.

1. Regarding the name, "America." Reporter, Mr. Cora.
2. Latest discoveries about Christopher Columbus; his life and his voyages. Reporter, Mr. Geleich.
3. Books, pamphlets, and drawings in relation to Christopher Columbus and his time, on the occasion of the 400th anniversary of the discovery of America. Reporter, Mr. Cora.
4. Voyages to the New World in the beginning of the sixteenth century, particularly those of the French. Reporter, Mr. Gaffarel.
5. Who were the peoples who inhabited Central America prior to the immigration of the Aztecs and other Northern tribes, and how arose the Mexican Empire?
6. The position of the Huarteks and their relations toward the history of Mexico. Reporter, Mr. Seler.
7. Periodical order of the invasions of the barbarians into the old Mexican Empire.
8. Prehistoric history and migrations of the Chibchas. Reporter, Mr. Uhle.

Archæology.

9. Do architecture and ante-facts of the pre-Columbian America, particularly stone (*zadeite*) and clay implements and vessels, give any proof of a direct connection of the Old with the New World at that time?
10. Antiquities from the State of Vera Cruz (Mexico). Reporter, Mr. Stübel.
11. Are the antiquities found lately in Costa Rica entitled to the supposition that they come from a civilized people who, at the time of conquest, were already extinct? Reporters, Messers. Polakowsky and Peralta.
12. Religious and symbolic meaning of the different idols, statuettes, and figures found in Peruvian graves; classification of the Canopes according to the different types.
13. About the use of forms in producing clay vessels in Mexico and Peru. Reporter, Mr. Reis.
14. Mode of production and ornamentation of textiles in pre-Columbian America. Reporter, Mr. Stübel.
15. Order of age of the Peruvian architectural monuments.
16. The kitchen-offals (*saushaquis*) in Brazil. Reporter, Mr. G. H. Müller

Anthropology and ethnography.

17. The doctrine of the geographical provinces in its significance for the ethnology of the American continent. Reporter, Mr. Bastian.
18. List of the peoples and tribes of America prior to the discovery and conquest of America; ethnographical map of North and South America.
19. Anthropological classification of the wild tribes of the pre-Columbian and present America; craniological atlas. Reporter, Mr. Virchow.
20. The question relating to the unity or plurality of the American aborigines viewed from the examination of their hair. Reporter, Mr. F. J. J. ...

21. Can it be asserted from the present standpoint of craniology that the American race has inhabited America since the deluge, and that the shape of the skull of the old inhabitants corresponds with the skull of the present Indians? Reporter, Mr. Cora.

22. Have we any right to assert that all the varieties of the American race have their origin in America and that they have undergone no essential change in consequence of foreign influences? Reporter, Mr. Cora.

23. About the artificial deformation of the skull of the old Indian tribes as compared with deformations customary with the peoples of Europe, Asia, and the South Sea. Reporter, Mr. Virchow.

24. Do we find among the Indian tribes of the Northwest of America peculiarities which indicate near relations to Asiatic tribes? Reporter, Mr. Aurel Krause.

25. Anthropology of the inhabitants of Old America at the time of Cortez. Reporter, Mr. Hartmann.

26. Right and customs in Old Mexico. Mr. Grossi.

27. Anthropology and human sacrifices in pre-Columbian America. Mr. Grossi.

28. Cremation of the dead prior to and after the discovery of America. Reporter, Mr. Grossi.

29. Domestic animal races in Old Peru. Reporter, Mr. Vehring.

30. The plants in use with the old Peruvians. Reporter, Mr. Wittmack.

Linguistics and palæography.

31. The chief linguistic families on the Amazonas and on the Orinoco. Reporter, Mr. Adam.

32. Linguistics of the tribes of the central part of South America. Reporter, Mr. Von den Steinen.

33. Distinctions in the nature and form between the languages spoken on the coast and the highlands of Peru; close relation of the first to the languages of Central America.

34. Do Quichua and Aymara belong to the same family of languages? Reporter, Mr. Steinthal.

35. Can you discern in the idioms of the west coast of America a grammatical relationship to the languages of Polynesia? Reporter, Mr. Steinthal.

36. Is the syntax with intercalation and the embodying of the personal pronoun or of the regimen a peculiarity of most of the American languages?

37. Does a resemblance exist between the Chinese and Toltec written characters? Reporter, Mr. Charnay.

The first day of the Congress will be devoted to the discovery of the New World, the pre-Columbian America, and to the geology of America; the second day to archæology; the third day to anthropology and ethnography; the fourth, to linguistics and palæography.

Beginning September 29, the office of the Congress will be at the Museum für Völkerkunde, No. 120 Königgrätzer street, Berlin.

All communications relating to the Congress must be addressed to Dr. Hellmann, secretary-general of the committee of organization, No. 120 Königgrätzer street, Berlin.

The honorary president is Dr. Von Gossler, minister of clerical and educational affairs, etc.

Messrs. H. R. Merton & Co.'s circular gives the stocks (in tons) of copper afloat for, advised by mail, and in store at Liverpool, Swansea, London, and Havre, and the prices per ton of Chili bars, as follows :

End of—	Stocks.				Deliveries, France and England.			Prices.			
	1888.	1887.	1886.	1885.	1888.	1887.	1886.	1888.	1887.	1886.	1885.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.				
January	45,692	61,375	58,589	51,364	5,928	8,520	7,498	£77½	£38¾	£40	£47¾
February.....	52,593	59,546	58,621	52,369	4,616	7,054	7,137	78¾	39¾	41	47¼
March.....	58,747	57,023	58,499	52,456	5,489	7,900	8,608	80½	39½	41½	45¼
April.....	64,349	56,172	61,069	54,384	5,877	6,304	7,090	80½	39¾	41¾	43¼
May	69,487	54,770	60,485	53,478	6,044	10,065	7,215	80¾	39¼	39½	45½
June	72,243	51,972	61,550	54,137	6,212	10,692	7,768	81	40	39¾	44½
July.....	75,412	52,256	62,247	53,723	9,766	7,515	8,097	80½	40	38¾	43½
August		51,206	66,111	55,389		8,858	5,616		40½	39¾	42¾
September...		49,176	64,826	57,165		7,962	8,684		39¾	41½	40¾
October		48,503	62,827	56,547		11,320	6,999		44¼	40¾	39½
November...		45,121	62,780	53,984		13,216	7,950		66¾	39¾	42¾
December ...		42,301	63,290	57,070		12,087	5,345		85	38½	41
Year						111,493	88,017				

COMMERCIAL EMBARGO BETWEEN FRANCE AND ITALY.

It is now nearly five months since the definite rupture of friendly commercial relations between France and Italy, and the situation which has resulted in both countries from the special and retaliatory tariffs which took effect March 1, last, offers an interesting study to the student of international commerce and tariff legislation.

The circumstances which led to the present strained and unfortunate state of affairs were, briefly, as follows: On November 3, 1881, a commercial treaty between France and Italy was adopted, to take effect February 9, 1882, and continue ten years, unless denounced by one or both of the two contracting parties prior to January 1, 1887, in which event it could be abolished on January 1, 1888. The treaty had, therefore, five secure years of life, and in the worst event one year more was vouchsafed, during which the people of both countries might prepare for the final rupture, or for such new conditions as might meanwhile be agreed upon.

Under this treaty the wines of Italy were admitted to France on payment of the nominal import duty of 2 francs per hectoliter (less than 1½ cents per gallon), and those of France, being uniformly of higher quality, bore a proportionate duty when imported to Italy of 3 francs per hectoliter. This was a concession on both sides—the general import duty on wines imported both to France and Italy from countries having no special treaty being 4.50 francs per hectoliter. The treaty of 1881 made other special and mutual concessions—particularly concerning port dues and other details relating to maritime intercourse, coasting, and fishery privileges—between the two nations. The five years succeeding the winter of 1881 witnessed the

the French Mediterranean ports, French steamers from Marseilles to North and South America touched at Genoa, Naples, and Palermo for freight and passengers, and the common, cheap wines of Italy were poured into France by shiploads to supply the deficit caused by the ravages of the phylloxera in the vineyards of this country.

Italian wines are largely of so low a quality, and withal so unskillfully made that, with the exception of the Chianti and a few other brands, chiefly from Tuscany, they were rarely exported and had only a limited value for local consumption until the necessities of France and the Franco-Italian treaty of 1881 opened to them a large and profitable market for the purposes of "coupage," or mixture, with the richer but waning vintages of Provence and Languedoc. Under the stimulus of this new demand the product of Italian wines developed rapidly, reaching, in 1886, the unprecedented total of 35,564,000 hectoliters, of which 8,136,000 hectoliters were grown in Sicily. But from 1883 to 1885 certain adverse influences began to interfere. The St. Gothard Railway was opened and Genoa began to attract a valuable shipping trade with Switzerland and southern Germany, which had been previously monopolized by Marseilles. France, by a bold and clever movement, had established a protectorate over Tunis, close to the shores of Sicily, thereby grasping privileges which Italy insisted should have fallen to her share. German diplomacy saw its opportunity, and by a policy, which is part of the well-known political record of that period, cemented the central European alliance and helped to turn the sympathies of Italy northward and against France. Without going more fully into causes, it may be broadly stated that, as a result of this constantly increasing friction, both parties to the treaty of 1881 grew dissatisfied and gave mutual notice that they would demand a revision before January 1, 1888.

Then ensued a long and fruitless series of negotiations. Commissions were appointed by the French and Italian governments to prepare a new treaty of commerce; but after months of labor and disputes they were unable to agree, and the treaty of 1881, having been provisionally extended two months beyond the beginning of the present year, was permitted to lapse on the last day of February, and was replaced by special tariffs enacted by each government in a more or less retaliatory spirit and regulating all imports from the territory of the other power.

It is asserted—with what justice it is not within the province of this report to inquire—that the responsibility for this rupture of amicable commercial relations was mainly the work of Italy, which was not only the first to denounce the existing treaty, but throughout the subsequent negotiations imposed—as the French press continued to assert—arbitrary and impracticable conditions. However this may have been, the special tariffs enacted with the other are nearly iden-

of 1,000 per cent., and the new rate was, of course, absolutely prohibitory. In whole categories of other classified merchandise the special schedules on both sides increased by 50 or 100 per cent. the duties imposed by the general tariffs of either government upon such goods when imported from another country with which no special treaty existed. In brief, these special tariffs, enacted to replace the lapsed treaty of 1881, are distinctly retaliatory measures, each intended to restrict and injure, as far as possible, the commerce of the other nation. Their effect has been precisely what might have been foreseen. Both countries are suffering from the congestion in their trade, thus artificially produced, and the commercial and agricultural classes, particularly in Italy, are weary of the strife, and hoping eagerly that some compromise may yet be reached which will restore the former freedom of commerce.

Thus far the effects of the blockade seem to have fallen more severely upon Italy than France. In the former country there is a dearth of capital which paralyzes commercial enterprise, and the farmers are, in general, poorer and more dependent than the French upon the immediate sale of each year's vintage. Their wines, as already stated, are of lower quality, and when exported are valuable mainly for mixture with foreign wines. In southern Italy the distress is already acute. Money is so scarce as to be almost unobtainable by people of moderate means, and many peasant proprietors with mortgages on their property have been forced to make ruinous sacrifices. The market values of ordinary wines have fallen as low as 4, 8, and 10 cents per gallon, and all collateral interests, including cooperage and the traffic in staves, are correspondingly depressed. The crisis was precipitated at a time when native ordinary wines were abundant and cheap in France, not so much by reason of a profuse vintage last year—as because the working classes have learned to consume the “piquettes” or artificial wines made from dried grapes imported from the Levant. As the wine export to Italy had been previously confined mainly to champagne, Burgundy, and Bordeaux wines of high quality, the blockade has not sensibly affected the French wine growers or dealers. France has a steady and well-established export demand for her wines, which Italy has not; but if the present restrictions are to be permanently maintained no one can doubt that the Italians, by perfecting their processes of manufacture, will eventually produce in large quantities wines which will bear exportation, and seriously encroach upon a trade with Russia, England, the Netherlands, and the United States, over which France has hitherto held entire control.

But in order to realize the full effect of this war of prohibitory tariffs it is requisite to consider the aggregate traffic, the whole list of raw and manufactured products which the natural laws of trade would bring into exchange between the two countries. From the returns of 1886—the last year of which the complete statistics are accessible—it appears that France imported

INDIAN COTTON GOODS.

	Francs.
Wines.....valued at....	89,680,722
Cocoons and silk products.....do.....	84,789,604
Olive oil.....do.....	17,415,068
Domestic animals.....do.....	20,558,866
Fresh fruits.....do.....	6,570,988
Other products.....do.....	90,307,794
Total.....	309,323,042

Total.....

On the other hand Italy imported from France during the same year—

	Francs.
Silk goods.....valued at...	57,000,000
Woolen goods.....do.....	24,475,000
Wines, skins, tools, clothing, jewelry, paper, etc.....do.....	110,982,098
Total.....	192,457,098

These figures may not seem large to Americans—accustomed to the colossal statistics of commerce in our own country—but they represent a trade so vital to the prosperity of these two countries that the statesmen on either side of this international dispute believed that the other could not endure a blockade, and would be forced to surrender as soon as the strictures of the special tariffs became operative. Thus far such expectation has not been realized. Each side is waiting for the other to yield, but, so far as can be seen, the end is still distant and uncertain. —MARSEILLES, July 24, 1888.

FRANK H. MASON,
Consul.

EXPORTS OF HENNEQUEN FROM PROGRESO, YUCATAN.

Year.	Total export.	Value.	Exported to New York.	Exported to Great Britain.
	<i>Bales.</i>	<i>Piasters.</i>	<i>Bales.</i>	<i>Bales.</i>
1880.....	97,357	1,805,848	83,984	7,212
1881.....	139,433	2,726,567	112,048	18,511
1882.....	135,083	2,739,556	95,048	15,160
1883.....	178,976	3,537,507	139,215	14,150
1884.....	233,311	3,471,647	187,978	20,833
1885.....	244,746	3,334,812	211,004	14,076
1886.....	228,387	3,029,727	197,704	14,601
1887.....	219,105	5,894,420	201,969	9,491

INDIAN COTTON GOODS.

Commenting upon the growth of India's trade in cotton goods, the Times, of India, writes:

made to ascertain the total annual consumption of

Exports and mill consumption of Indian cotton in bales of 3½ cwt. (392 pounds).

Year.	Exports.	Mill consumption.	Total exports and consumption.	Percentage of mill consumption.
1887-'88	1,536,000	*815,000	*2,351,000	*34.6
1886-'87	1,552,000	726,000	2,278,000	31.8
1885-'86	1,197,000	643,000	1,840,000	34.9
1884-'85	1,447,000	597,000	2,044,000	29.2
1883-'84	1,705,000	531,000	2,236,000	23.7
1882-'83	1,762,000	457,000	2,219,000	20.6
1881-'82	1,608,000	398,000	2,006,000	19.8
1880-'81	1,298,000	379,000	1,677,000	22.6
1879-'80	1,128,000	308,000	1,436,000	21.4
1878-'79	847,000	268,000	1,115,000	23.9

* Estimated.

In the present decade the mill consumption, it will be seen, has increased by no less than 204 per cent. Ten years ago the mills apart from the hand-loom industry, an unknown quantity, took one-fourth of the visible supply; now they require over one-third. We are, therefore, within measurable distance of the period when India will require to import cotton if the trade continue to expand at its present rate of progression. There are pessimists who affirm that, as the trade depends upon China for its very existence, the day is not far distant when the Celestial Empire will, by setting up mills of her own, pay India back in the same coin as India has paid England. But, like most matters celestial, it will be time enough to think of this when John Chinaman gives India something more than a hint. No country in the world can point to such remarkable figures as India can in her export trade in cotton yarns. In a dozen years the shipments have risen from 8,000,000 pounds to 113,500,000 pounds. The increase last year on the preceding twelve months was 21,750,000 pounds, equal to over 23½ per cent. On the two years before the improvement was 35,333,333 pounds, equal to over 45 per cent.—*London Economist, July 14, 1888*

THE TRANS-CASPIAN RAILWAY.

[Translation from the Journal de St. Petersburg—transmitted by Mr. Wurts.]

A Russian writer, who knows Central Asia, having given attention to it some years, sends us the following communication:

The event of the 15th of May, 1888, will certainly take a prominent place in the history of the civilization of people in the last quarter of the nineteenth century. Thanks to the extraordinary energy of General Annenkoff, that day, the anniversary of the coronation of their Imperial Majesties was solemnly celebrated by the inauguration of a railway of 1,345 versts, binding forever the heart of Central Asia (Samarcand) to Russia. It is truly surprising with what rapidity this line, which extends from the borders of the Caspian to the tomb of Tamerlane, was completed.

Since 1880 all Western Europe, and especially England, has followed with an attentive eye our successes in Central Asia. In fact the events were of a nature to interest all the world. The capture of the fortress of Géok-Tépé (January 12, 1881) led to the final fall of the barbarous domination of the Turcomans; the peaceful annexation of Merv, that proud city which for centuries has troubled its neighbors of Bokhara and Persia; the defeat of the Afghans near Kouschk (March 4, 1885); the extension of the Russian protectorate over Bokhara; all these events raised the prestige of the Russian name to a great height among the populations of Central Asia, India, Afghanistan, and Persia. But how has the importance of the rôle of

capital of the province of Sogdiana, erected on the ruins of the monarchy of Alexander, or may undertake archæological excavations among the ruins of the ancient Merv-Baïram-Ali? What an immense field is opened to commerce by the new line! Thanks to it, the rich Turcoman carpets, the wool of merinos, the silk of Bokhara, the leather, the silk stuffs of Samarcand, and the products of the minor industries of these countries can in twelve or thirteen days not only reach the Russian commercial centers, but also those of Paris, Vienna, Berlin, and London.

It is, therefore, but natural that the solemnity of the 15th of May should have assumed the character of a fête.

The construction of the Trans-Caspian Railway was begun at the close of 1880. To facilitate the transportation of the food and forage of the troops of General Skobélew, then on the march from the Gulf Mikhaïlovsky, on Ghéok-Tépé, a line 22 versts long was built between the gulf and the aoul of Moullah-Kara. After the capture of Ghéok-Tépé in 1881 this line was prolonged to the stronghold of Kizyl-Arvat (217 versts). In this state the line was kept up to 1885. When in the month of February of that year alarming news of the situation on the Afghan frontier was spread, it was decided to prolong the railway, as a stroke of strategy, to the banks of the Amou-Daria. As circumstances required that this work should be completed as soon as possible (the line between Kizyl-Arvat and Tchardjoui, on the Amou-Daria, was to have a length of 754 versts), its execution was confided to General Annenkoff, who directed the service of the transportation of the troops of the Empire. Facts were not long in showing how well worthy of this confidence was the general. On July 2, 1885, the first rails were placed at Kizyl-Arvat, and from the 29th of November of the same year the station Askhabad was open. On July 2, 1886, the line reached the stronghold of Merv, and on November 30 the Bokharan city of Tchardjoui on the Amou-Daria. At this point the strategic rôle of the railway ceases.

Nevertheless the line would certainly not have the importance that it possesses now if it had not been carried on to at least the first commercial center, for instance, the city of Bokhara. Therefore, at the suggestion of the constructor, it was decided, the 15th of June, 1887, to build it from Tchardjoui on to Samarcand. The 16th of January, 1888, the first rails were laid on the right bank of the Amou, and the 15th of May the first locomotive came to a stand before the tomb of Tamerlane.

There, in a few words, is the history of the construction of the longest European railway. We have been particular in stating the precise dates which mark the opening of the different sections of the line, for even on this point the organs of the Russian press do not seem, it appears to us, to be well informed. Have we not seen, as an example, one of the most serious journals affirm lately that the section from the Gulf Mikhaïlovsky to Askhabad was built during the expedition of General Skobélew? How can it be expected after that that people should be well informed about this railway?

Without touching upon the strategic nature of the line, we shall concern ourselves only about its value for commerce and industry. It is true that the want of space does not permit us to enter into details.

The writer of these lines has had occasion to visit the Trans-Caspian territory before and after the construction of the railway. These journeys have enabled him, without in the least being inclined to exaggerate this great undertaking, to see for himself that the railway has animated the desert countries of the Turcomans so that they are now not recognizable. The populations of the cities of Askhabad, Merv, and Tchardjoui have rapidly increased. The sandy island and desert of Ouzoun-Ada are transformed into a bay of the first order, with a town and a church. All these facts confirm the saying of the

thereby call back into life the ancient granary of Central Asia. If, by the reparation of the dyke, the administration of the Crown property succeeds in irrigating only one-half of the land which it is expected to reclaim—that is, 150,000 instead of 300,000 déciatines ($2\frac{5}{8}$ acres, the déciatine)—our spindles can find in Russia one-half of the cotton they need, and will no longer have to import it from abroad. Then it will not be surprising if we see American journals declare that Russia, instead of remaining a consumer of cotton, has become a producer and sends its products to foreign markets.

Let us not, however, be optimists. Let us be contented with the prospect of the economy of 90,000,000 of rubles that Russia pays annually for its imports of cotton. But it is especially the territories of Bokhara, Khiva, and Turkestan that will profit by the building of this line. He who has crossed the superb plain of Zaraschane and has been able to admire the flowers of Samarcand, Katta-Kourgan, Nouveau-Margellen, and Taschkent alone can give an account of the importance of this work. If, notwithstanding the entire absence of means of transportation (for one can not consider transportation by camel as a serious thing, the camel supporting a load of from 12 to 16 poods only, 38 pounds to the pood, and requiring from two to three months to go from Taschkent to Orenburg), the production of cotton has in seventy-five years almost doubled in the territories of Khiva, Bokhara, Kokhand, and Turkestan, it is beyond doubt that it will soon be increased tenfold, thanks to the building of the railway.

Moreover, by the finishing of this road, at best, half of Iran will pass naturally into the radius of Russian commerce. The economic development will be particularly marked in the rich Persian province of Khorassan, with its holy city of Meshed. Twenty years ago attempts were made on one side to enter into commercial relations with that city, and it is solely on account of the lack of means of communication that they came to nothing. As soon as the carriage-road between Askhabad, Koutchan, and Meshed is finished, the Trans-Caspian Railway will receive by this road millions of poods of merchandise, and the province of Khorassan will again become what it was formerly—the granary of Persia.

GERMANY'S TRADE IN THE YEAR 1887.

The April number of the Statistics of the German Empire contains a definite statement of the imports and exports of the German Empire during the year 1887.

Of special commerce (exclusive of goods in transit or to be finished), the imports amounted to 3,188,800,000 marks = \$758,930,000, and the exports to 3,190,100,000 marks = \$759,250,000, showing the surplus of exports to be 1,000,300 marks = \$320,000. Deducting the value of declared imports and exports of gold and silver in bullion, scrap, and coins, partly used to balance accounts, the value of imports amounted to 3,124,700,000 marks = \$743,600,000, and the exports to \$746,140,000; showing the excess of exports to be 10,600,000 marks = \$2,540,000. Such excess would be larger by 27,800,000 marks if goods imported or exported for being finished or refined were included—the value of such articles imported amounting to 61,400,000 marks and those exported to 89,200,000.

A board of experts, intrusted with estimating wholesale or average values, reports, as a rule, a tendency for higher prices in an industrial respect. Prices for raw material and manufactures may have experienced a greater decline than in the preceding year in many instances, but a number of others have perceptibly increased.

The imports of the year 1887 (after deducting gold, silver in bullion, scrap, and coins), compared with the year 1886, have increased by 2,441,700 tons (1 ton = 2,200 pounds), and in value by 236,400,000 marks; the exports by 571,440 tons, and by 149,700,000 marks in value.

Increase of the volume of imports has, in the main, been effected by the

Importation of the following articles:	<i>Tons.</i>
.....	453,845

	Tons.
Waste, manures, coal.....	453,845
Fresh fish and eggs.....	212,419
Wheat.....	273,976
Rye.....	73,278
Oats.....	86,546
Barley.....	157,630
Rice.....	9,611
Flour, etc.....	4,553
Potatoes.....	19,498
Fresh and dried fruit.....	9,581
Ardent spirits.....	2,635
Tobacco in leaf, oil seed.....	20,514
Petroleum.....	71,005
Lubricating oil.....	10,376
Cubic niter.....	18,162
Resin, wood bark, tan, asphaltum and bituminous marly-stone, chalk, lime and cement raw stones.....	89,274
Slate.....	13,677
Bricks and tiles.....	33,483
Ores of lead, copper, and iron.....	223,541
Dross of ores.....	66,011
Pyrites, alum ore, raw lead, rails, lumber, timber.....	413,482
Raw cotton.....	40,003
Flax, hemp, and jute.....	

	Tons.
Pyrites, alum ore, raw lead, raw iron, &c.	9,755
Raw cotton	21,797
Flax, hemp, and jute	1,203

This increased import, in quantity, is slightly balanced by a diminished import, as follows:

	Tons.
Flax, hemp, and jute	9,755
This increased import, in quantity, is singularly	21,797
import, as follows:	4,303
Salted herrings, corn, and dari	13,579
Beans, coffee	
Lard	
.....sulphate of ammonia, fluted	

The increase in the volume of exports is chiefly caused by—

	<i>Tons.</i>
Bran, linseed cake, straw, coke.....	84,483
Pit coal	126,137
Pressed coal, butter, potato starch and potato flour, sugar.....	51,066
Fruit juices mixed with alcohol, calcined soda, baryta, chloride of potassium.....	458
Sulphite of soda, super-phosphate.....	17,603
Ice, mineral water, hollow glass, cement	27,640
Trass, lime, bricks and burned coarse paving-stones, ordinary tiles (not glazed), pyrites, zinc ore, dross of ores.....	23,776
Scrap-iron, iron articles	82,499
Paper and paste-board	9,628
Flax, hemp, and woolen goods.....	1,667

In general, these and other increases are higher than the decrease of other export articles, though, in some instances, quite considerable decreased exports are reported, viz:

	<i>Tons.</i>
Wheat	5,454
Oats	8,209
Barley	37,333
Potatoes	26,194
Flour	1,060
Green vegetables and fruit.....	9,138
Sugar beets	18,954
Spirits	21,328
Wine in kegs	8,887
Salt	20,316
Rape-seed, colza.....	6,259
Stassfurt waste salt	21,481
Iron ores	87,098
Pig-iron	38,388
Bloom-iron, iron wire (exclusive of coppered, tinned, zincked, etc.).....	3,067
Horses and cattle, 101,568 heads.	

Computing the sales for 1887 at the average prices estimated for 1886, a comparison shows (prices for both years being at the same rates) that imports, after deducting the value of gold, silver in bullion, etc., would have increased only by 232,571,000 marks (instead of by 236,420,000 marks, in reality), and exports by 158,954,000 marks (instead of by 149,732,000, in reality). Hence, fluctuations of prices alone caused an increase of import values by 3,849,000 marks, and a decrease of export values by 9,222,000 marks.

An increase of values of imports took place in horses, fresh fish, eggs, wheat, oats, barley, arrac, rum, cognac, coffee, raw tobacco, mineral oils, zinc and copper ore, cubic niter, lumber and timber, cotton, flax and hemp.

A considerable diminution took place in the value of imports of hogs, salted herrings, Peruvian bark, hides and skins, precious stones, silk and silk waste, linen and woolen yarns, cotton and woolen goods.

Exports have increased in values, particularly in sugar butter tea 1

chine parts (exclusive of sewing-machines), glass and glassware, paper and paper goods, clothing, linen goods, books, carded wool, half-silk fringes, cotton and woollen goods.

A considerable diminution in values of exports was noticed in horses, sheep, barley, spirits and wines in kegs, quinine, gunpowder, skins for furs, lumber, timber, notions, fancy goods, sheep wool, woollen yarn, and woollen trimmings.

Since the year 1880, imports and exports (after deduction of gold and silver in bullion) have experienced the following fluctuations, both in volume and value, viz:

Year.	Imports.		Exports.	
	Tons.	Marks.	Tons.	Marks.
1880.....	14,170,000	2,820,000	16,401,000	2,895,000
1881.....	14,848,000	2,963,000	16,672,000	2,977,000
1882.....	15,299,000	3,129,000	17,208,000	3,191,000
1883.....	16,297,000	3,263,000	19,239,000	3,272,000
1884.....	17,787,000	3,260,000	19,151,000	3,204,000
1885.....	17,867,000	2,944,000	18,813,000	2,860,000
1886.....	16,944,000	2,888,000	18,924,000	2,985,000
1887.....	19,386,000	3,124,000	19,495,000	3,135,000

In giving the figures of imports and exports it must be borne in mind that imports and exports in river and sea vessels are not subject to declaratory rules, and that the corresponding quantities and values are not given. Thus the values of such ships as are built at domestic wharves of domestic material, and sold to foreign countries, are not included in the above sums. Since the sale of vessels, particularly of men-of-war and torpedo boats, for foreign account has been quite considerable of late and greatly counterbalances purchases of vessels for home use, and since the values of vessels built for foreign account amount to millions, this must favorably affect the values of exports.

It deserves also consideration that from 1879 to 1887, in Germany, as well as in foreign countries, repeated changes in tariff rates have been introduced, causing higher duties for many goods. In giving import and export figures, this circumstance should not be overlooked. The increased import of 1884 and 1885, for instance, is mainly attributable to the new tariff measures which went into force 1885; in the following year this increase was balanced by a reduced importation. This applies also to 1887, when the increase of duties upon ardent spirits, cereals, etc., was decreed.

The depression of values of imports and exports from 1883 to 1886 is chiefly due to the heavy fall of prices which raw produce and manufactures showing extent.—BERLIN, June 27,

ment showing values of merchandises exported from the German customs territory during the calendar year 1887 (exclusive of goods in direct transit and goods refined and finished. — Special commerce).

Articles.	Goods exported.		Increase and decrease in 1887, as compared with 1886.	Total value.		Increase and decrease in 1887, as compared with 1886.
	1886.	1887.		1886.	1887.	
	Tons.	Tons.	Tons.			
als.....	163,467	154,582	— 8,885	\$23,934,000	\$21,366,000	— \$2,568,000
and plants for seed, food, and gardening.....	83,167	95,186	+ 12,019	4,770,000	4,642,000	— 128,000
re and waste materials.....	137,228	193,656	+ 56,428	2,893,000	3,909,090	+ 1,016,000
.....	9,725,873	9,942,795	+ 216,922	22,461,000	22,911,000	+ 450,000
and other articles of consumption.....	1,708,166	1,623,019	— 85,147	91,817,000	97,527,000	+ 5,710,000
animal food:						
Raw and simply-prepared articles of consumption.....	38,988	41,875	+ 2,887	5,258,000	6,589,000	+ 1,331,000
Manufactures.....	15,855	18,032	+ 2,177	5,458,000	6,281,000	+ 823,000
cereals and other farinaceous articles of food:						
Raw materials.....	262,690	187,258	— 75,432	5,438,000	2,822,000	— 2,616,000
Manufactures.....	190,180	192,091	+ 1,911	8,761,000	8,635,000	— 126,000
fruit, vegetables, fresh and dried.....	124,803	97,872	— 26,931	2,761,000	2,489,000	— 272,000
ices, table-salt, ice-cream.....	185,027	166,967	— 18,060	8,637,000	8,478,000	— 159,000
ffee and coffee substitutes, cocoa, tea:						
Raw materials.....	13,505	16,206	+ 2,701	476,000	576,000	+ 100,000
Manufactures.....	3,370	5,450	+ 2,080	215,000	346,000	+ 131,000
gar, sirup, and molasses.....	623,903	675,736	+ 51,833	35,408,000	44,750,000	+ 9,342,000
mented beverages.....	238,757	213,618	— 25,139	16,431,000	14,034,000	— 2,397,000
mfits, preserves, and other fine articles of consumption.....	6,789	5,596	— 1,193	1,593,000	1,414,000	— 179,000
bacco and tobacco manufactures:						
Raw materials.....	2,971	920	— 2,051	501,000	187,000	— 314,000
Manufactures.....	1,325	1,398	+ 70	878,000	923,000	+ 45,000
y of fats, fixed oils, and mineral oils.....	62,392	56,821	— 5,571	5,795,000	5,626,000	— 169,000
w materials.....	29,425	20,036	— 9,389	1,620,000	1,195,000	— 425,000
nufactures.....	32,967	36,785	+ 3,818	4,175,000	4,431,000	+ 256,000
aterials and products of chemical and pharmaceutical industry.....	597,361	627,267	+ 29,906	51,022,000	53,871,000	+ 2,849,000
w materials:						
Raw materials of chemical industry.....	171,463	159,208	— 12,255	1,377,000	1,407,000	+ 30,000
Drugs for medicinal purposes and for perfumes.....	2,550	2,549	— 1	1,321,000	1,363,000	+ 176,000

GERMANY'S TRADE IN THE YEAR 1887.

Continued.

GERMANY'S TRADE IN						
Showing values of merchandises exported from the German customs territory during the calendar year						
Articles.	Goods exported.		Increase and decrease in 1887, as compared with 1886.	Total value.		Increase and decrease in 1887, as compared with 1886.
	1886.	1887.		1886.	1887.	
	Tons.	Tons.				
—Continued.						
aste for making glue.....	22,187	24,270	+	937,000	1,031,000	+ 94,000
and findings.....	5,370	4,619	-	716,000	650,000	- 66,000
stuffs.....	49,247	52,623	+	1,178,000	1,149,000	- 29,000
stuffs, raw.....	4,575	6,397	-	163,000	242,000	+ 79,000
abstances, bases, acids, and salts.....	205,938	232,446	+	11,359,000	12,632,000	+ 1,273,000
d volatile oils, medicines and perfumes.....	28,778	32,790	+	6,575,000	6,325,000	- 250,000
s, varnishes, lakes, glutens.....	15,337	16,904	+	2,316,000	2,409,000	+ 93,000
es and priming goods.....	8,854	8,023	-	3,904,000	3,230,000	- 674,000
r, and distillates of tar.....	27,602	25,321	-	1,723,000	1,993,000	+ 270,000
ry, colors.....	55,460	62,117	+	19,452,000	21,434,000	+ 1,982,000
nd manufactures of asbestos, stone, clay, and glass industry.....	2,153,606	2,476,328	+	24,300,000	26,793,000	+ 2,493,000
stones, glass waste.....	1,223,896	1,457,096	+	7,040,000	8,014,000	+ 974,000
articles.....	113	202	+	51,000	90,000	+ 39,000
china ware.....	37,141	45,092	+	1,336,000	1,459,000	+ 123,000
and manufactures of metal industry, except machines, instruments, and apparatuses.....	808,232	879,473	+	7,645,000	8,085,000	+ 440,000
.....	84,224	94,465	+	8,227,000	9,145,000	+ 918,000
.....	3,226,523	3,221,406	-	84,792,000	89,604,000	+ 4,812,000
.....	1,864,778	1,808,326	-	2,127,000	2,150,000	+ 23,000
.....	458,856	425,448	-	12,808,000	12,761,000	- 47,000
.....	504,805	452,819	-	14,387,000	16,996,000	+ 2,609,000
.....	360,792	395,277	+	26,937,000	30,817,000	+ 3,880,000
.....	24,025	24,930	+	3,223,000	3,369,000	+ 146,000
.....	12,818	14,265	+	9,269,000	10,252,000	+ 983,000
.....	449	341	-	16,040,000	13,359,000	- 2,681,000
.....	545,625	523,372	-	24,819,000	25,592,000	+ 773,000
.....	248,338	255,342	+	2,069,000	2,127,000	+ 58,000
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	9,487	10,929	+	1,442	4,098,000	5,210,000	+	1,112,000
Carving and plaiting materials, bristles.....								
Wooden and carved ware:								
Simply worked articles.....	242,987	213,710	—	29,277	4,656,000	3,985,000	—	671,000
Finished manufactures.....	39,682	37,949	—	1,733	12,216,000	12,354,000	+	138,000
Plaited, brush-makers', and sieve-makers' ware.....	5,131	5,442	+	311	1,780,000	1,916,000	+	136,000
Materials and manufactures of the paper industry.....	152,694	172,816	+	20,122	19,338,000	22,500,000	+	3,162,000
Raw materials and half stuff.....	78,795	88,326	+	9,531	3,555,000	3,960,000	+	405,000
Paper and pasteboard.....	63,932	73,560	+	9,628	12,068,000	14,512,000	+	2,444,000
Manufactures of paper and pasteboard.....	9,967	10,930	+	963	3,715,000	4,028,000	+	313,000
Materials and manufactures of the leather, oil-cloth, and fur-goods industry.....	33,914	35,165	+	1,251	58,393,000	58,509,000	+	116,000
Raw hides and skins.....	17,045	17,818	+	773	6,701,000	6,396,000	—	405,000
Dressed skins, leather, oil-cloth.....	9,500	9,512	+	12	18,878,000	16,394,000	—	2,484,000
Leather, harness-makers' and purse-makers' works.....	7,064	7,395	+	331	31,887,000	34,725,000	+	2,838,000
Furs.....	305	440	+	135	926,000	994,000	+	68
Materials and manufactures of the textile and felt industry, clothes.....	208,004	237,920	+	29,916	242,036,000	255,115,000	+	13,079,000
Hairs, feathers, and other quilt materials.....	5,465	5,699	+	234	4,909,000	5,253,000	+	344,000
Spinning materials.....	105,658	127,992	+	22,334	28,336,000	30,114,000	+	1,778,000
Wools and wads.....	18,378	17,739	—	639	25,714,000	24,351,000	—	1,363,000
Woolpe-makers' ware.....	4,009	4,490	+	481	913,000	1,023,000	+	110,000
Rugs, felts, hair weavings.....	2,160	2,605	+	445	1,681,000	2,028,000	+	347,000
Huffs.....	46,599	51,299	+	4,700	97,176,000	104,633,000	+	7,457,000
Posiery.....	11,770	12,856	+	1,086	25,270,000	25,913,000	+	643,000
Trimings, button-makers' ware.....	5,594	6,227	+	633	13,550,000	14,872,000	+	1,322,000
Laces, embroideries, blond laces.....	1,025	1,280	+	255	14,128,000	14,868,000	+	740,000
Clothes, linen underwear, millinery.....	6,519	6,900	+	381	23,143,000	24,690,000	+	1,547,000
Hennets, ornamental feathers, flowers, ornamental hair.....	827	833	+	6	7,216,000	7,132,000	—	84,000
House industry.....	3,074	3,014	—	60	5,525,000	5,331,000	—	194,000
Raw materials.....	179	211	+	32	341,000	401,000	+	60,000
Manufactures.....	2,895	2,803	—	92	5,184,000	4,929,000	—	255,000
Road vehicles, upolstered cars and furniture.....	8,519	7,338	—	1,181	660,000	785,000	+	125,000
Machines, and apparatuses.....	86,840	94,699	+	7,859	27,224,000	28,732,000	+	1,508,000
Goods and jewelry.....	15,996	17,679	+	1,683	21,554,000	18,649,000	—	2,905,000
Precious goods and jewelry, except toys.....	2,754	2,481	—	273	16,965,000	13,652,000	—	3,313,000
Books.....	13,242	15,198	+	1,956	4,589,000	4,997,000	+	408,000
Literature and fine arts.....	11,745	12,553	+	800	14,780,000	17,577,000	+	2,797,000
Miscellaneous, no description.....	89	73	—	16	113,000	93,000	—	20,000
Total.....	18,924,283	19,495,689	+	571,406	726,226,000	759,255,000	+	33,029,000

Drugs for medicinal purposes and perfumes.....	9,915	9,263	—	652	4,903,000	4,456,000	—	447,000
Resins, waste for making glue.....	80,657	94,998	+	14,341	4,607,000	4,844,000	+	237,000
Ferments and finings.....	20,701	23,597	+	2,896	1,338,000	1,457,000	+	119,000
Raw dye-stuffs.....	90,860	90,511	—	349	2,915,000	2,936,000	+	21,000
Tanning stuffs, raw.....	93,658	109,052	+	15,394	4,285,000	5,327,000	+	1,042,000
Manufactures:								
Simple substances, bases, acids, and salts.....	81,305	76,247	—	5,058	5,708,000	6,159,000	+	451,000
Ether and volatile oils, medicines, and perfumes.....	6,523	6,054	—	469	2,229,000	2,510,000	+	281,000
Resin oils, varnishes, lakes, glutens.....	13,526	14,661	+	1,135	2,166,000	2,279,000	+	113,000
Explosives and priming goods.....	1,603	1,221	—	382	596,000	427,000	—	169,000
Pitch, tar, and distillates of tar.....	47,693	52,340	+	4,647	2,227,000	2,721,000	+	494,000
Stationery, colors.....	27,654	30,182	+	2,528	7,817,000	8,129,000	+	312,000
Materials and manufactures of asbestos, stone, clay, and glass industry.....	937,809	1,168,972	+	231,163	9,222,000	11,047,000	+	1,825,000
Earths and stones, glass waste.....	802,990	1,001,796	+	198,806	6,072,000	7,329,000	+	1,257,000
Asbestos articles.....	51	27	—	24	22,000	11,000	—	11,000
Stoneware.....	8,793	7,949	—	844	443,000	409,000	—	34,000
Earthenware and china ware.....	117,210	149,458	+	32,248	749,000	950,000	+	201,000
Glassware.....	8,765	9,742	+	977	1,935,000	2,319,000	+	384,000
Materials and manufactures of metal industry, except machines, instruments, and apparatuses.....	1,221,972	1,533,611	+	311,639	41,394,000	49,040,000	+	7,646,000
Metals.....	974,839	1,271,822	+	296,983	11,665,000	15,011,000	+	3,346,000
Raw metals, not precious, also coined.....	202,374	204,799	+	2,425	8,481,000	10,038,000	+	1,557,000
Manufactures:								
Simply worked articles.....	25,037	26,749	+	1,712	1,321,000	1,391,000	+	70,000
Finished manufactures.....	16,949	27,488	+	10,539	2,510,000	2,850,000	+	340,000
Articles of other metals, not precious:								
Simply worked articles.....	687	732	+	45	129,000	172,000	+	43,000
Finished manufactures.....	1,747	1,709	—	38	1,177,000	1,155,000	—	22,000
Precious metals, also coined.....	339	312	—	27	16,110,000	18,423,000	+	2,313,000
Materials and manufactures of the wood-carving and plaiting industry.....	1,877,846	2,295,513	+	417,667	29,299,000	34,634,000	+	5,335,000
Adding wood and timber, raw.....	1,140,580	1,307,517	+	166,937	6,786,000	7,779,000	+	993,000
Adding and plaiting materials, bristles.....	34,432	37,205	+	2,773	6,936,000	7,095,000	+	159,000
Wooden and carved ware:								
Simply worked articles.....	686,882	932,838	+	245,956	10,872,000	14,671,000	+	3,799,000
Finished manufactures.....	13,735	15,411	+	1,676	3,170,000	3,347,000	+	177,000
Texted, brush-makers', and sieve-makers' ware.....	2,217	2,542	+	325	1,535,000	1,741,000	+	206,000
Materials and manufactures of the paper industry.....	56,418	63,964	+	7,546	2,815,000	3,092,000	+	277,000
Raw materials and half stuff.....	51,022	58,059	+	7,037	1,733,000	1,922,000	+	189,000
Paper and pasteboard.....	4,443	4,763	+	320	648,000	648,000	.....	.....
Manufactures of paper and pasteboard.....	953	1,142	+	189	433,000	522,000	+	89,000

ent showing the values of merchandises imported into the German customs territory during the calendar year 1887, etc.—Continued.

Articles.	Goods imported for consumption.		Increase and decrease in 1887, as compared with 1886.	Total value.		Increase and decrease in 1887, as compared with 1886.
	1886.	1887.		1886.	1887.	
	Tons.	Tons.	Tons.			
Manufactures of the leather, oil-cloth, and fur-goods industry	80,179	79,578	601	\$41,883,000	\$39,254,000	— \$2,629,000
and skins.....	68,857	67,909	948	21,752,000	20,215,000	— 1,537,000
ns, leather, oil-cloth.....	10,361	10,533	172	16,139,000	14,364,000	— 1,775,000
mess-makers' and purse makers' works.....	871	1,006	135	3,848,000	4,532,000	+ 684,000
.....	90	130	40	144,000	157,000	+ 13,000
.....	524,177	608,810	84,633	230,053,000	236,723,000	+ 6,670,000
.....	10,116	10,499	383	6,027,000	5,849,000	— 178,000
and manufactures of the textile and felt industry, clothes	446,220	536,078	89,858	121,998,000	137,133,000	+ 15,135,000
ers, and other quilt materials.....	60,251	55,469	4,782	79,569,000	73,794,000	— 5,775,000
aterials.....	220	249	29	55,000	57,000	+ 2,000
oads.....	691	811	120	355,000	331,000	— 24,000
ers ware.....	5,399	4,544	855	11,216,000	10,236,000	— 980,000
hair weavings.....	125	133	8	398,000	394,000	— 4
.....	144	141	3	450,000	437,000	— 13,000
and button-makers' ware.....	415	284	131	5,826,000	4,214,000	— 1,612,000
roideries, blond-laces.....	319	300	19	1,346,000	1,258,000	— 88,000
nen underwear, millinery	277	302	25	2,813,000	3,018,000	+ 205,000
ornamental feathers, flowers, ornamental hair.....	2,989	3,469	480	5,324,000	6,094,000	+ 770,000
dustry.....	2,155	2,515	360	3,847,000	4,489,000	+ 642,000
erials.....	834	954	120	1,477,000	1,604,000	+ 127,000
ures.....	1,669	485	1,184	299,000	140,000	— 159,000
cles, upholstered cars and furniture.....	31,845	35,971	4,126	7,826,000	10,018,000	+ 2,192,000
hines, and apparatuses.....	566	578	12	6,855,000	5,619,000	— 1,236,000
and jewelry.....	434	442	8	6,808,000	5,573,000	— 1,235,000
oods and jewelry, except toys.....	132	136	4	47,000	46,000	— 1,000
.....	3,846	3,718	128	5,706,000	5,695,000	— 11,000
terature and fine arts.....						
description.....						
	16,944,869	19,386,565	+ 2,441,696	700,902,000	758,934,000	+ 58,032

TRADE AND TECHNICAL SCHOOLS.

There has recently come into my hands a prospectus of one of the leading technical schools of Germany, and as the technical and trade schools of the Empire have quite a reputation at home and abroad, and reference is from time to time made to them in foreign publications, it has occurred to me that an exposition of the courses of study pursued at one of the foremost of them would be worthy of a place in our Consular Reports, and I therefore write an article on the subject.

This institution, called Technikum, is under the particular control of the city of———, with a general superintendence by the Saxon ministry of the interior, and has for protectors Baron von Körmeritz, Count zu Münster, Prince Schwarzenberg, and Baron von Welck. It is open to all nationalities, and is for the purpose of familiarizing young men with machinery and its operation and grounding them in the different branches of industry, and consists of two departments, one designated as the engineer school, where young men are prepared for managing factories and machine-shops, and the other as the master-workman school, where young men are fitted to be overseers, bosses, etc.

The first is for those who expect to have industrial establishments of their own or become superintendents of large establishments, or to travel for such establishments, and the second more for master-workmen, modelers, and mechanics. In the engineer school technical instruction is given in spinning, weaving, milling, brewing, making of porcelain, earthenware, glassware, furniture, starch, matches, steel and ironware, electrical apparatus, elevators, condensers, fire-proof safes, gas-fitters' articles, scientific articles of various kinds, machine building, mill construction, etc. In the master-workman school young men are taught to manage and construct machinery who think of becoming bosses, designers, draughtsmen, modelers, mechanics, etc., in machine-shops, mills, and factories, or expect to have small workshops or establishments of their own. Students are required to be at least sixteen years old.

The graduates of the Technikum are scattered all over the German Empire in industrial establishments, and are to be met with also in foreign countries. The names of some three hundred of them are given as references in the pamphlet before me, with the positions they hold and the names of the establishments with which they are connected.

While at the Technikum young men have no opportunity to support themselves by outside work, as their time is all taken up in study and work at the Technikum.

The design of the Technikum is to fit young men for practical life, and with that end in view it is in connection with

vances and improvements made in technical knowledge and appliances, of which its pupils get the full benefit. The instruction is so imparted that the pupils come together in classes, not merely to listen to lectures and dissertations on the subjects in which they are interested and have the matter left to them to grasp in the best way they can, without any special explanation being afterwards afforded nor any effort made to ascertain whether they understand and are able to apply what has been said, but the teachers talk with the different pupils individually, so as to teach the less quick-witted and make smooth whatever rough places there may be. Repeated repetitions of the same thing, as well as constant work in execution of the principles taught, materially aid in fixing the instruction given. Pupils are also much employed on constructive work, such as the drawing of machinery and making plans for machines, as well as drawing plans for the building of factories, mills, etc. This takes place daily, and the endeavor is to make the pupils competent to draw up plans and specifications for factories, etc. They are also given practical exercise in operating machinery, testing it in various ways, and estimating its power exercised in hydrometry and in electro-technic and practiced in field surveying.

The Technikum has a library of 2,500 works, consisting of over 3,000 volumes, and containing a large collection of technical drawings (about 4,000 numbers) relating to all branches of technology; a reading-room, in which are kept all the leading technical and industrial periodicals, as well as about 100 of the chief political newspapers of Germany, Austria, Russia, England, etc.; a technological collection; a collection of machine models; a collection of models and materials for teaching construction; a collection of objects for stereometry and descriptive geometry; a collection of wire, wooden, and plaster models for free-hand drawing; a collection of apparatus and instruments in physics, chemistry, electro-technic, field surveying and leveling, and apparatus and instruments for dynamometric and hydrometric exercises.

Scientific excursions are taken from time to time, under the leadership of the teachers, when visits are made by rail or otherwise to factories and industrial establishments of various kinds, and their operation explained at length to the students. The institution under consideration being right in the midst of a very important manufacturing district, and having secured for its pupils from a number of manufacturers the right of visit and inspection of their establishments, claims to possess facilities for imparting a practical knowledge of the different branches of industry enjoyed by no other industrial school. There are some fifty of these industrial establishments to which it has access, embracing machine-shops, foundries, mills, paper factories, spinning and weaving mills, earthenware factories, breweries, dye and printing works, etc. *all are all afforded a certain measure of relief*

about by grave misconduct on their part, the Technikum allows them a certain amount of money for each day laid up, and if permanent injury is the result, then a certain amount of relief throughout life, or an appropriate lump sum in satisfaction of all demands the student may have on it. If, also, while actually under way to these places or returning therefrom an accident occurs a like relief is granted.

The school terms begin the middle of April and middle of October, and it is immaterial whether the student enters at the spring or autumn term. At other seasons of the year students are taken only when they are sufficiently advanced to join a class on an equality. There are also preparatory classes, beginning in February and August, respectively, where pupils who wish to thoroughly ground themselves in what had been previously learned, to repair a deficiency, or have spare time which they wish to profitably employ until the regular term commences, are fitted for the regular school term. This instruction is given free, but only to those who have paid for the regular term.

The tuition fee, paid in advance for the whole term or in installments, is \$32.50 for a term of six months in the higher department and \$30 for the same length of time in the lower department. Then, in addition, there is a commencement fee of \$1.50, \$1, or 75 cents, according to department, for the use of the library and reading-room for the whole time a student is at the Technikum. Needy young men who have been half a year at the Technikum, and conducted themselves honorably during the whole of the time, are granted an abatement of the tuition money, irrespective of their nationality, when they prove to the satisfaction of the directors that they are unable to pay for their instruction. Foreigners, before entering, have to be always provided with a paper in the nature of a passport, and minors with the written consent of their fathers or guardians.

The entire cost of attendance on the institute a term (six months) is reckoned as follows: Instruction, \$30 to \$32.50; room and board, according to requirements, \$10.50 to \$17.50 a month, or \$62.50 to \$105; books, drawing materials and articles, etc., \$3.75 to \$5.

Students do not board and lodge at the Technikum, though they are directed to good boarding-houses if they desire it. The cheapest board, including room, is put at \$10.50 to \$11.25 a month. They are all requested to avoid living at hotels, restaurants, and the like. The teachers also take boarders.

The length of time requisite to learn the different branches of work is put at two and a half to three years for the engineer school and at a year and a half for the master-workman school.

Students are not required to have labored to some extent before entering the Technikum at the branch of industry they propose to follow, but it is urgently recommended that they do so, and if not done previous to entering the Technikum it is expected to be undertaken afterwards. Young persons, however, who wish to

who desire to pass the master-workman's examination must, previous to being admitted to the chief examination, show two years of practical preparation.

Students are expected to conduct themselves in a respectable manner, both within and without the Technikum, to obey all the commands of the directors and teachers, and maintain a deferential deportment towards them. They are required to punctually attend all lessons and exercises, and to be on hand at all examinations. Smoking in the instruction rooms is strictly prohibited, and students' clubs are permitted only when they have an educational end in view and do not interfere with the studies and purpose of the Technikum. The rules of such clubs and lists of their members have to be laid before the director of the Technikum from time to time, and he is to be kept informed of all exercises, lectures, excursions, and the like. Other clubs are strictly prohibited, as incompatible with diligent and regular study and calling for too great an expenditure of time and money, and a participation in their organization or proceedings is regarded as a just ground for prompt expulsion from the Technikum. Meetings, balls, concerts, and the like must have the approval of the director of the Technikum, and he has the right to prohibit students from visiting any public place or saloon which he thinks improper for them to go to.

Students are reprimanded and expelled for misconduct. The expulsion may be for a time or permanently; for minor offenses they are only disciplined.

Students receive, from time to time, certificates showing their standing at the Technikum. Those who have studied and worked with industry at the Technikum are assisted by its managers in obtaining situations upon leaving the institution or subsequently.

The studies pursued are arithmetic, algebra, descriptive and analytical geometry, trigonometry, planimetry, stereometry, algebraic analysis and higher equations, differential and integral calculus, integration of differential equations, drawing, physics, chemistry, mechanics, machine construction, mill building, electro-technic technology, architecture, field surveying and leveling, commercial law, book-keeping, German, French, and English languages, history, geography, stenography, and penmanship, combined with practicable application of principles learned.

In the engineer school there are two courses of study, either of which can be taken at the pleasure of the student, one being two and a half years in duration, and the other three years long. They are known as Courses I and II.

With respect to Course I, the conditions of admission are that the student, in addition to a fair general school education, should be acquainted with the leading rules of arithmetic and algebra and the first principles of geometry, and a certain amount of practical preparation is desired though not demanded. The course is divided up into five half-years. During the first half-year the student attends weekly: German

hours; geometrical drawing, two hours; descriptive geometry, three hours; drawing elementary machines, six hours; commercial law and book-keeping, one hour; mill construction, two hours — the last mentioned of which is obligatory on those only who are preparing themselves for mill building.

During the second half-year the following is the amount of time devoted weekly to each branch of study: German language, two hours; analysis and higher equations, two hours; analytical geometry, two hours; differential and integral calculus, four hours; physics, two hours; chemistry, two hours; technical mechanics, four hours; principle of cohesion, four hours; elementary machines, four hours; drawing and sketching of models, three hours; descriptive geometry, two hours; drawing elementary machines, six hours; mill building, two hours; double-entry book-keeping (optional), two hours.

In the third half-year the time allotted is as follows: German language, two hours; analytical geometry, two hours; differential and integral calculus, four hours; physics, two hours; chemistry, two hours; technical mechanics, four hours; principle of cohesion, four hours; elementary machines, four hours; drawing and sketching of models, three hours; descriptive geometry, two hours; drawing elementary machines, six hours; mill building, two hours; double-entry book-keeping (optional), two hours.

In the third half-year the time allotted is as follows: German language, two hours; analytical geometry, two hours; electricity and magnetism, two hours; technical mechanics, four hours; hydraulics, two hours; graphostatics, two hours; lifting and transporting machines and presses, four hours; steam-engines, four hours; principles of construction, two hours; chemical technology, two hours; shadow and perspective drawing, two hours; drawing of lifting and transporting machines, three hours; drawing of buildings, three hours; mill building, two hours.

In the fourth half-year the time is divided up as follows: German language, two hours; differential and integral calculus, two hours; electricity and magnetism, two hours; analytical mechanics, two hours; mechanical theory of heat, two hours; propellers and steering, four hours; steam-boilers, two hours; hydraulic motors, four hours; pumps, two hours; mechanical technology, two hours; laws of construction, two hours; drawing of propellers and steering apparatus, six hours; drawing of steam-boilers, three hours; drawing of pumps and water-wheels, three hours; drawing of plans for building, three hours; field surveying and leveling, one afternoon.

During the fifth and concluding half-year of the course the division weekly is as follows: German language, two hours; analytical mechanics, two hours; kinematics, two hours; theoretical principles of machinery, two hours; theory of regulators, two hours; electro-technic, four hours; locomotive construction, two hours; construction of tool machinery, two hours; small motors, two hours; designing and construction in civil engineering,

sketching of indicators on steam-engines, one afternoon; measurement of power of machinery, one afternoon; hydrometrical exercises, one afternoon; field surveying and leveling, one afternoon.

Students of Course I are also recommended to study the French and English languages—geography and history—but it is not obligatory upon them to do so. For instruction in French and English an extra charge of \$5 each a half-year is made. At the close of each full year those who desire a diploma as machinists have to undergo a preliminary examination with respect to it, and at the close of the entire course comes the graduation examination, and without a year, at least, of practical experience in some machine-shop no one can enter the last examination for the purpose of obtaining the machinist's diploma.

Course II is designed for young fellows who, after leaving school, go to work in some machine-shop and afterwards desire to add scientific training to practical experience. For this course, consequently, less preparation is required than for Course I, and students need only to be familiar with the branches studied up to a boy's fourteenth or fifteenth year in the common schools. This course is three years' long, divided into six half-year terms, and the amount of time given to each branch of study weekly is as follows:

First half-year: German language, four hours; arithmetic, two hours; algebra, six hours; planimetry, four hours; physics, two hours; elementary mechanics, two hours; drawing, six hours; geometrical drawing, three hours; descriptive geometry, three hours; drawing of machines, three hours; commercial law and book-keeping, one hour.

Second half-year: German language, two hours; algebra, six hours; planimetry, two hours; stereometry, two hours; trigonometry, four hours; physics, two hours; elementary mechanics, two hours; principle of cohesion, four hours; elementary machines, four hours; drawing, three hours; descriptive geometry, two hours; drawing elementary machines, six hours; mill building (optional), two hours; double-entry book-keeping (optional), two hours.

Third half-year: German language, four hours; review and application of principles learned in algebra, planimetry, stereometry, and trigonometry, four hours; analysis and higher equations, two hours; analytical geometry, two hours; differential and integral calculus, four hours; physics, two hours; chemistry, two hours; technical mechanics, four hours; elementary machines, four hours; shadow and perspective drawing, three hours; drawing elementary machines, six hours; mill building (optional), two hours.

Fourth half-year: German language, two hours; analytical geometry, two hours; differential and integral calculus, four hours; electricity and magnetism, two hours; chemistry, two hours; technical mechanics, four hours; lifting and trans-

Fifth half-year: German language, two hours; differential and integral calculus, two hours; electricity and magnetism, two hours; analytical mechanics, two hours; mechanical theory of heat, two hours; propellers and steering, four hours; steam-boilers, two hours; hydraulic motors, four hours; pumps, two hours; mechanical technology, two hours; laws of construction, two hours; drawing of propellers and steering apparatus, six hours; drawing of steam-boilers, three hours; drawing of pumps and water-wheels, three hours; drawing plans for buildings, three hours; field surveying and leveling, one afternoon.

Sixth half-year: German language, two hours; analytical mechanics, two hours; cinematics, two hours; theoretical principles of machinery, two hours; theory of regulators, two hours; electro-technic, four hours; locomotive construction, two hours; construction of tool machinery, two hours; small motors, two hours; designing and construction in civil engineering, two hours; estimation of costs, one hour; drawing of steam-engines, six hours; drawing of turbines, three hours.

Practical exercises: Sketching of indicators on steam-engines, one afternoon; measurement of power of machinery, one afternoon; hydrometrical exercises, one afternoon; field surveying and leveling, one afternoon.

At the end of the third and fifth half-year's course examinations of the students are held, and at the end of the full course a graduation examination. In addition to the studies enumerated students are recommended to take instruction in the French and English languages, and in geography and history. For each of the languages an extra charge of \$5 a half-year is charged. The work-master's school is for young fellows who have learned what is generally acquired in the common schools up to a boy's fourteenth or fifteenth year; that is, to read, write, and cipher with ease, and who, after leaving school, have worked for at least two years in some factory or workshop, and wish to obtain the theoretical instruction which will fit them to be designers, master-workmen, bosses, superintendents, and the like. The course is a year and a half in length, and is divided into three terms, as follows, with the amount of time devoted weekly to each branch of study, namely:

First half-year: German language, four hours; arithmetic, two hours; algebra, six hours; planimetry, four hours; physics, two hours; elementary mechanics, two hours; drawing, six hours; geometrical drawing, three hours; descriptive geometry, three hours; drawings of machines, three hours; commercial law and single-entry book-keeping, one hour.

Second half-year: German language, two hours; algebra, six hours; planimetry, two hours; stereometry, two hours; trigonometry, four hours; physics, two hours; elementary mechanics, two hours; study of cohesion, four hours; elementary machines, four hours; drawing, three hours; descriptive geometry, two hours; drawing elementary machines, six hours; mill construction (voluntary), two hours.

Third half-year: German language, four hours; physics, two hours; mechanics, two hours; elementary machines, four hours; study of steam-engines, two hours; steam-boilers, two hours; tool machinery, two hours; mechanical technology, two hours; drawing elementary machines, six hours; designing of machinery and entire establishments, three hours; architecture, three hours; mill construction (voluntary), two hours.

Practical exercises: Sketching indicators on steam machinery, one afternoon; measurement of power of machinery, one afternoon; hydrometrical exercises, one afternoon; field surveying and leveling, one afternoon.

Students who intend to follow a special branch of machine work, such as locomotive building, electro-technic, and the like, and are able to show practical experience at it, are allowed, so far as the plan of studies of the work-master school permit of it, to participate in some of the studies in the first and second course of the engineer school.

In the work-masters' school students need attend only in winter, and can use the summer to work at their trades. The Technikum also provides instruction in the ordinary branches of common school education, so far as it does not conflict with their regular studies, for young men who, through disease, lack of means, or other circumstances, have been unable to prepare themselves to pass the examination prescribed by the German Government for those who wish to cut down their period of active military service from three years to one. It much prefers, however, that the student should have passed such an examination before coming to it.

The law here is that every young man of physical ability shall serve three years in the active army, but by passing a certain mental examination he is entitled to serve but one year; provided, further, that he furnishes his own uniform, etc. It is, therefore, the object of all parents of fair means to have their sons pass this examination, and thus cut off two years of military drudgery among the bores and blockheads; and the great end of a boy's ambition at school is to successfully undergo this examination. If this examination be not passed, no matter what the boy's station in life may be, he is compelled to pass three years in the army, I believe. The youth of the land are thus stimulated to diligence at their studies, and the entailment of their period of military service from three years to one is constantly held up to them as a reward for their industry. Not only is this mental spur very salutary in its effects, as the world well knows, but the one year of training in the army, or more, as it may be, does, in a great measure, for physical development what the school performs for the mind. With the army as a mainspring of action, robust bodies are needed to fill it, and the gymnasium is an inseparable part of school education in Germany. Young men serve with alacrity for one year in the army, and regard it as an excellent school

To pass the examination to entitle him to serve but one year in the active army a young man must be well acquainted with his own tongue, and, besides, have a knowledge of two of the four foreign languages of Latin, Greek, French, and English, which two is left with him to decide. In the ancient languages he must know the leading rules and be able to translate readily an easy extract from the prose writers, Cæsar, Cicero, Livy, and Xenophon, as well as easy passages from the poets. In the modern languages he is expected to be able to pronounce words with correctness, have a knowledge of the leading grammatical rules, and be able to translate prose writings of moderate difficulty, such as, in French, Voltaire's Charles XII, Barthélémy's Voyage du Jeune Anacharsis, Fenelon's Telemaque, Michaud's Histoire des Croisades, Ségur's Histoire Universelle, and the like; and in English, Goldsmith's Vicar of Wakefield, Scott's Tales of a Grandfather, Irving's Sketch Book, and the like, and to translate German composition into English or French without any grave violations of spelling or grammatical structure. In geography he must have a knowledge of what is commonly taught under the three divisions of mathematical, physical, and political geography, including the leading railways and canals of Europe. He is required to have knowledge of general history, and is examined with respect to the history of the Greeks and Romans, the history of his own country, and the general history of the world, attention being paid not so much to his familiarity with dates as to his acquaintance with the general connection of events. In mathematics he has to be well acquainted with the rules of arithmetic, and in geometry have a knowledge of planimetry up to and including the principle of the circle, and in stereometry be grounded in the most important formulas. In physics he is required to be well posted as to the general properties of bodies, such as impenetrability, advisability, porosity, weight, specific gravity, etc., and with the principles of heat, magnetism, and electricity. In chemistry he is examined, and in principles of physics, not above mentioned, only when he desires it in order to make up thereby for deficiencies in the branches generally employed in making the examination. Chemistry and higher physics are therefore used as substitutes. — MAYENCE, *June 15, 1888.*

JAS. HENRY SMITH,
Commercial Agent.

GEOLOGY OF HAMILTON, ONTARIO.

TERRACE CONSISTING OF CLAY, SANDS, AND GRAVELS.

A.—*Brick-clay.*

A glance at the geology of the district will show that nearly the whole of the clay and brick earth lies to the west of Burlington Heights or in Dundas Valley. This district is limited toward the southwest by a ridge of gravel stretching across the valley, almost parallel to Burlington Heights, in the vicinity of Dundas. On the east side of this ridge, the clay and brick earth is found in the form of a thin layer, which is not more than a few feet thick, and is composed of a fine, soft, yellowish-brown clay, which is well adapted for the manufacture of bricks.

brick-making purposes. This confines the district that is of absolute use in the brick industry to a space about 2 miles in the longest direction and $1\frac{1}{2}$ miles at the widest. The depth of the clay varies from 6 to 8 feet. It is very generally underlaid by sand. The total amount of clay available for bricks may be roughly computed at about 20,000,000 cubic yards. The annual outputs of the various yards in the district amount to above 15,000,000 bricks, the whole of which is absorbed in Hamilton and the surrounding district.

The brick-clay lying on the eastern side of Burlington Heights is only of very limited extent, not more than 100 acres at most, and giving an estimated amount of available material of about 1,250,000 cubic yards, giving thus a total amount of brick-clay in the vicinity of Hamilton of 21,250,000 cubic yards. This estimate, from the broken nature of the district and somewhat irregular manner in which the clay is laid down, may be somewhat too high, and it may be safer to say that there are not more than 20,000,000 cubic yards, with an annual output of 15,000,000 bricks.

The red and blue clay lying upon the northern side of Dundas Marsh has not been utilized for brick-making, although there is no doubt it might be so used at a somewhat higher expense than the present price of bricks would warrant.

At Burlington drain-tiles and bricks are made out of a red-colored clay. In the county of Halton there is an extensive clay deposit from which bricks have been made. Within the last two years a small quantity of red bricks have been made out of a small bed of brownish-yellow clay on the 14th lot of the 6th concession of Barton. The bed is about 2 feet thick, resting upon blue clay. The deposit between is not large.

The whole of the bricks hitherto made in Hamilton are of a red color; but lately attempts have been made to manufacture a white brick out of the underlying blue Erie clay. There seems to be no reason why this enterprise should not be successful, as this clay is manufactured into white brick at Brantford, on the west, and Toronto, on the east. If found suitable at Hamilton it will add an enormous quantity of available material to the brick manufactures of the city, as the whole district is underlaid by it. The mode by which this blue clay is being brought into use is as follows: The clay is mixed with water until it is quite liquid and the pure clay floats. It is then ran off into tanks and allowed to settle into sufficient consistency, when it is made into brick in the usual manner.

B.—*Clay for sewer pipes.*

Only about 2 feet of clay lying upon the surface of the brick-clay district is considered fit for this purpose. The most of the material used by the *Ring Company* consists of this bed of clay and *Dundas*

reported by the manager of the company to be of no use. When the clay is first dug out of the pit it is very hard, but on being allowed free access to the air and damp it readily crumbles to a fine powder. It is afterwards ground and worked into a clay, which, being mixed with the clay from the brick field and a small proportion of a marly clay, found generally at the base of the brick beds, forms the material out of which the sewer pipes are made. The Medina red shales have been ground and worked into a clay and tried for the same purpose. They were found to answer the purpose equally as well as the other clays. It is almost impossible to estimate anything like an approximate quantity for this material, as it forms the underlying rock of the whole district, although very little of it is visible on the south side of Burlington Bay. Practically the only limit to its production will be the cost of clearing the overlaying clay, sand, and rock, so as to get at it.

How far this industry might be pushed in this neighborhood it is difficult to say, as the real drawback to it would be the finding of a sufficient market for the articles when manufactured. At present the Hamilton and Toronto Sewer Pipe Company is fully competent to supply the whole of the demand for this class of goods in western Canada.

An attempt is being made to manufacture terra-cotta ware from a similar clay in the neighborhood of Milton, in Halton County. Its operations will be watched with considerable interest by those interested in this class of manufactures. If successful at Milton there is no reason why it should not be successful at Hamilton. If not sufficiently free from impurities for terra cotta it may be utilized for a fine class of bricks.

C.—*Fire-clay.*

There is no fire-clay known in the district. Iron-founders use a blue clay in association with fire-brick for the purpose of lining their cupolas. Very little of it, however, is used for this purpose. This blue clay is mostly composed of the disintegrated blue shales of the Clinton formation washed down from the escarpment and deposited around the base in the shape of clay. It is reported as of a refractory nature, and answers the purpose for which it is used admirably. There is enough of this material for all purposes to which it is applied for many years to come. The other clays in the district are not of any known use to manufacturers. They are generally too calcareous, but form an excellent loam for agricultural purposes. Some of them, especially the marly ones, might, with care, be advantageously employed upon various soils.

D.—*Molding-sands.*

There are eight townships in the county of Wentworth—Barton, Glanford, Saltfleet, Binbrook, Ancaster, Beverly, West Flamboro, and East Flamboro—and, with the exception of Binbrook and Glanford, extensive deposits of brownish-yellow or orange-colored sand, suitable for molders, are to be found in every township. The largest deposits occur in Beverly, where extensive

western side of an extensive cedar swamp, forming with the underlying clay and gravel a high bluff bordering the marsh. In the townships of West Flamboro and East Flamboro beds of this sand are known to exist, and as the greater part of the soil of both townships is a sandy loam, probably molding-sands exist in more extensive quantities than we are aware of.

In Ancaster township only one bed of workable quantity is known. It is on the 54th lot of the 1st concession, quite close to the escarpment. A small bed about 6 inches in depth lies amongst the brick-clays near the marsh. It is probable these two deposits form nearly the whole of this class of sand in the township, as in other places where sand occurs it is of reddish or greyish hue, the grey consisting of fine silt and water-washed sand, and used with the red as a building sand. In Saltfleet this sand is only known towards the western margin of the township between the escarpment and the bay. As is the case in Barton township, it occurs in slight rolls immediately under the surface soil and in patches of generally small dimensions, varying from a few feet to a few yards in length and breadth and from 1 to 2 feet in thickness.

In Barton township it is only known to exist on the terrace between the escarpment and the bay. In East Hamilton it occurs in rolls similar to Saltfleet, but where found in Hamilton it is close to the water, and forms a high bluff varying from 5 to 15 or 20 feet in height. When of such height it is generally interstratified with thin laminæ of similarly colored clay.

At Port Nelson, in the township of Nelson, Halton County, about 12 miles north of Hamilton, there is an extensive deposit of this same class of sand. One or two peculiarities of this sand is worth noting. First, its affinity for clay. In all cases where found it is in close proximity to the clay, generally resting upon it, and is more or less mixed with it. In one sample the clay and sand were about equally divided, and in others they varied chiefly, however, in favor of sand. Second, its position among the other materials of the district. It is rarely found in beds, but generally in pockets, although the material found in the pockets is always stratified. It is apparently the latest addition to the elevation of the terrace or surface where found, as in all cases it lies immediately under the surface soil.

Of the origin of this sand there can be little doubt but it is the result of the washing down of the escarpment at a time when the terrace was at a lower level than at present and partly covered with water, and that the patches or depressions in which the sands were formed were pools in the shallow lake. Its tenacity, owing to the amount of clay contained in it, would, when the surface came under the influence of the air, prevent its being so readily washed away as the reddish clean sands, and so, in course of time, it would present the form of rolls, in which it now appears. All the low-lying deposits would appear to confirm this idea with the exception of the bluff overlooking the

sands. In the neighborhood of Grimsby there are also banded shales showing similar tints. It must also be remembered that a great quantity of the material came from that direction, being carried down by the current, which, no doubt, in earlier times followed a course in the same direction as at the present day, although it would then be somewhat nearer the escarpment than at present. At that time the Burlington Beach, if above water at all, would not have attained the elevation it has now. More likely it would be so low as to be covered with water or so that the waves would wash over it, carrying with them the fine material of sand and clay, and at times disturbing the whole of the lagoon which the bar formed. Clay would also be brought down from the top of the escarpment by the streams, as well as washed down by the rain. This clay is of a brownish-white tint, and would naturally give this color to any deposits left by the water with which it came in contact.

The beds of Beverly are associated with a yellowish-brown clay, and are very likely the results of a rearrangement of the materials forming this clay when first deposited. Those in the upper part (western) of this township are surrounded by a marsh on the eastern side, and high hills of sharp sand and gravel to the west. The rock underlying this clay and sand belongs to the Guelph formation, which is made up principally of brown-whitish and buff-colored material.

Whatever may be the origin of these sands, there is no doubt as to their forming the latest addition to the soils of the district in which they lie. They are extensively used in Hamilton by the iron-founders, and some of them report them as being as good for their purposes as the imported sands from Albany, N. Y., and others. Brass-founders, however, prefer the Albany sand, as it gives a finer finish to their castings. Great quantities of these sands are exported to various points in Canada and the United States.

Sir William Logan (*Geology of Canada*, 1863, p. 800) classifies these sands as a fine quartzose sand, containing at the same time small quantities of argillaceous and ferruginous matter. Compared with the statement of Mr. G. Gladstone in his mining and quarrying article, "Iron" (*Cassell's Technical Educator*, p. 255), that molding-sand should be fine and even in quality and should consist principally of silica, with the addition of a little alumina, it would seem that the molding-sands of the Hamilton district should answer every purpose in the way of casting. Practical molders, however, say that the Hamilton sands do not admit of as fine a finish being put upon the castings as the Albany sand. This, however, may be remedied by improving the mode of preparing them for use in the foundry. That this might be the case, is the more forcibly brought out by a statement made by an experienced iron-molder that there were small quantities of sand in the neighborhood of Hamilton equal to the best imported sands, but as the care required to separate it from the other is so great that it will not pay to do so, the two classes are in every case mixed and sold together.

The quantity of molding-sand

to be even in texture, fine and adhesive enough to retain the form of the mold, but at the same time to be sufficiently porous to absorb any moisture that may be generated by the intense heat of the casting.

E. — *Building sand.*

Enormous deposits of clean, clear, grayish and red-colored sand suitable for the manufacture of mortar exist throughout almost every township in the county. The chief supply for Hamilton is obtained in Barton and Saltfleet townships. At present great quantities of a gravelly sand is being used as a base upon which to lay the blocks used in paving the streets. This sand is obtained from the eastern end of the Burlington Heights and is overlaid by thick beds of hard pan and in some places by glacial débris, consisting of fragments of rock cemented together by a compact, hardened clay.

F. — *Gravels.*

Gravels of varying degrees of coarseness, from a sandy texture to good-sized pebbles, are to be found in various parts of the county. The most extensive beds are Burlington Heights, a gravel ridge extending across the valley near Dundas and Burlington Beach. Around the village of Ancaster there are numerous gravel pits, the produce of which has been used for road-making purposes, but not to any great extent.

ESCARPMENTS—SANDSTONES, LIMESTONES, AND SHALES—LIME AND WATER-LIME.

A. — *Sandstones.*

The Medina formation is rarely visible upon the southern side of Burlington Bay, but at Burlington village, on the northern side of the bay, it comes to the surface as red shales and sandstones. The stone readily yields to the weather, and is in consequence of no value from an economical point of view.

Lying on the top of the Medina there is a thickness of about 12 feet of a fine, close-grained sandstone known as the gray band. Where not stained with iron markings from the shales overlying, it forms a good building stone. The supply, however, must necessarily become exhausted, as, owing to its depth below the surface of the Clinton and Niagara beds, it will become too expensive to obtain. The last quarry of this stone is to be found in Chedoke ravine, to the west of Hamilton.

Many buildings in Hamilton have been erected with this sandstone, but it contained iron, which has weathered out and, owing to the action of the wet, has stained many of the walls with unsightly, rust-colored patches. In 1881 it appears in the shape of a projection of about 80 feet

In the Clinton shales there are some thin beds of sandstones which, with thin accompanying limestones, are worked for building stones. As a rule, however, the cost of production is too great to admit of any extensive operations.

B. — *Limestones.*

It is in the Niagara formation that most of the building stones used in foundations and for other purposes around Hamilton are to be found. These are altogether limestone of various degrees of fineness and texture. These beds generally lie under a thickness of bluish shale, thinly-bedded limestones, and broken, thinly-bedded cherty limestones, the depth of which sometimes exceeds 30 feet. At the head of James street the overlying beds are over 40 feet in thickness; on Strongman's road, east of James street, they are about 30 feet, while at the crossing of the public road, about 2 miles from the village of Ancaster, there is about 20 feet of broken material overlying a good solid bed of 5 feet of limestone. At the head of James street the stone fit for building purposes is in three layers, the upper one of whitish-blue limestone and 5 feet in thickness. The other two are of a grayish, argillaceous limestone, 1 foot 3 inches and 1 to 8 inches in thickness.

At Ancaster the upper escarpment is quarried chiefly to supply the demand of that district. The quarries there are of a bluish-gray hue, weathering to a drab color. In one of the quarries in this district the stone has a tendency to weather into pits, while the other, which is somewhat lower in the formation, appears to retain its form and texture throughout. This last is a very fine building stone, and should railway facilities ever be granted to the village it will no doubt be in much greater demand than at present—the cost of carriage militating against its use.

At Beamsville there are extensive quarries of Niagara limestone, and at Waterdown the same stone is also quarried for building purposes.

The same remarks regarding the cost of quarrying in the immediate vicinity of Hamilton apply to the limestones as well as the sandstones. Until a greater demand for building stone takes place it will not pay to go so deep as the best of these stones lie.

C. — *Building lime.*

Most of the lime used in the neighborhood is obtained by burning the limestones of the upper escarpment, the chief places being at Limeridge, 2 miles south of Hamilton, and at Ancaster village. At both places the stone burns to a good white lime, very free from waste. Lime is also obtained from the Guelph beds at Troy, in Beverly township, and at Dundas, in West Flamboro, from the Niagara. The extent of these beds is sufficient to supply this district for a long time to come.

D. — *Water-lime.*

Out of a bluish-gray, nearly brown argillaceous limestone, lying near the top of the Niagara formation, a stone is obtained which is used for water-lime.

ticular efforts to push its sale, it is as yet little known among the class requiring such material. It is used by the city of Hamilton in their sewerage, and very well spoken of by the city engineer as well as by Mr. K. Tully, C. E., of Toronto, to whom samples had been sent for inspection. Although established only eight or nine months, the proprietors expect to sell about 1,200 barrels before the end of the year. Next year it is the intention to put in a larger mill and push sales more vigorously. The stone is at present obtained from a quarry about 5 miles southeast of Hamilton, and consists of a series of thin layers, reaching a total of 18 feet in thickness. The estimated quantity of material now in view is about 13,000,000 barrels. In addition to this there are extensive beds of suitable material among the beds of the Niagara, throughout the whole of the escarpment.

F. — *Shales.*

The red shales, belonging to the Medina formation, have been experimented upon with the view of testing their capabilities for the manufacture of sewer pipes, and, as already stated, have been found to answer that purpose. Out of the disintegrated blue shales belonging to the Clinton and Niagara a sort of fire-clay has been made and used for the purpose of liming the cupolas of the iron-foundries of the city. — HAMILTON, ONT., July 26, 1888.

ALBERT ROBERTS,
Consul.

RAILROAD IN PERSIA.

According to the Moscow papers of to-day the first line of railway in Persia will be opened between the $\frac{8}{20}$ th of this month. It has been constructed by a Belgian company, and extends from Teheran to Shag-Abdul Azima, a distance of about 10 miles.

The construction of this line was surrounded by enormous difficulties, arising chiefly from the transport of material into Persia. Each mile cost nearly \$36,000, and the whole line cost more than \$400,000. The larger portion of the material was brought through the Caucasus and Russia from Belgium, and the duty paid amounted to \$40,000.

At the opening ceremony His Highness the Shah of Persia will be present. A very elegant car has been specially built for him.

It may be taken for granted that this short section of railway can not possibly pay the company, but the question of securing concessions for the construction of the entire line from the Persian Gulf to the Caspian Sea is conditioned on the success of this portion of the railway.

The whole line would be about 730 miles in length, and its importance

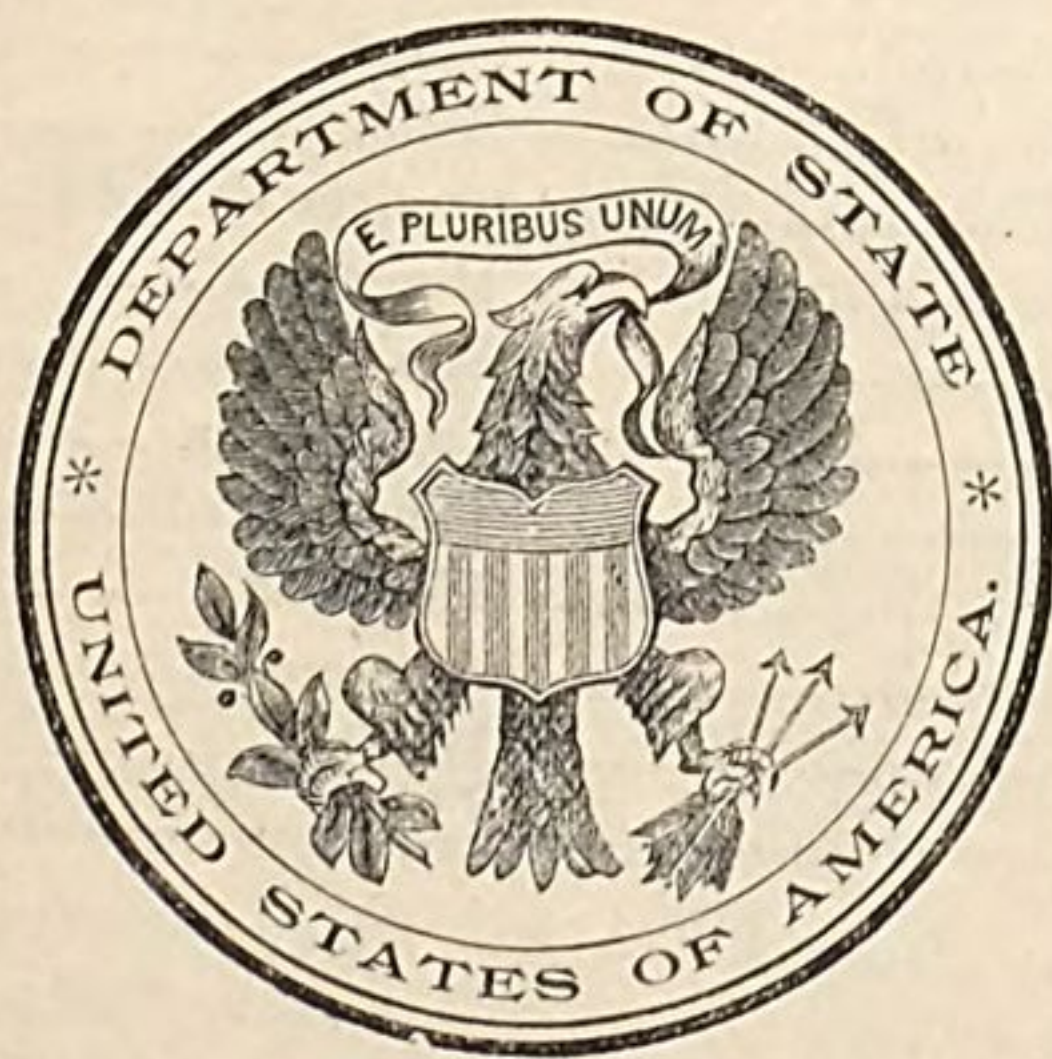
The Persians themselves hail

REPORTS

FROM THE

CONSULS OF THE UNITED STATES

No. 96.—AUGUST, 1888.



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GOVERNMENT PRINTING OFFICE

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WEIGHTS, MEASURES, AND CURRENCY MENTIONED IN THESE REPORTS.

Name.	Country.	U. S. equivalent.
Anna.....	India.....	3 cents.
Centimeter (cubic).....	.....	0.0610 inch.
Franc.....	France.....	19.3 cents.
Hectoliter.....	.....	26.417 gallons.
Kilogram.....	.....	2.204 pounds.
Kilometer.....	.....	3,280.899 feet.
Kroner.....	.....	\$0.268.
Liter.....	.....	1.0567 quarts.
Mark.....	Germany.....	24 cents.
Maund.....	India.....	82 pounds.
Millimeter.....	.....	0.0393 inch.
Milreis.....	Portugal.....	\$1.084.
Piastre.....	Turkey.....	\$0.0442.
Picul.....	China.....	133.35 pounds.
Pound.....	Great Britain.....	\$4.86.
Rupee.....	India.....	33.2 cents.
Taël.....	China.....	\$1.30.
Taël (haikevan).....	do.....	\$1.20.
Yen.....	Japan.....	\$0.81.

CONSULAR REPORTS

ON

COMMERCE, MANUFACTURES, ETC.

No. 96.—AUGUST, 1888.

SUGAR LAWS IN GERMANY AND AUSTRIA-HUNGARY.

In dispatch No. 271, dated July 26, 1887, sent from this consulate-general, the following was reported with regard to German tax on sugar:

“Although by an act approved June 1, 1886, a new classification of sugar and a new method of collecting tax on beet sugar, equaling a reduction of export bounties, was introduced, this act has just been superseded by act of July 9, 1887, to take force and effect on August 1, 1888.

“Section 1 of this new act provides that from and after this date the following rates of import duties shall be collected per 100 kilograms: (1) On sirup and molasses, 15 marks = \$3.57; (2) on other sugar of every description, 30 marks = \$7.14.

“If foreign sugar is consigned to a German sugar factory to be worked further there, the same may, subject to special orders of the federal council, be exempted from the tax of consumption (excise) [hereafter described].

“Section 2 provides that the internal beet sugar shall be subject to a sugar tax, to be collected (1) as ‘material tax’ [*material steuer*] on the weight of the raw beets intended for the manufacture of sugar, viz, 80 pfennigs (19 cents) per 100 kilograms; (2) as excise (tax of consumption) on the weight of sugar intended for home consumption, viz, 12 marks (\$2.85) per 100 kilograms. This ‘material tax’ shall be paid by the manufacturer, while the excise shall be paid upon sugar leaving the bonded sugar works or refineries for home consumption.

“Bounties shall be paid—in case of exportation of at least 500 kilograms—for every 100 kilograms, (a) for raw sugar containing at least 90 per cent.

sugar, 8.50 marks (\$2.02); (b) for candy and for sugar in white, full, solid loaves, lumps, tablets, cubes, etc., containing at least 99½ per cent. sugar, 10.55 marks (\$2.51); (c) for all other hard sugar, not otherwise provided for, as well as for all white dry sugar, containing not more than 1 per cent. water, in crystals, pulverized, etc., containing at least 98 per cent. sugar, 10 marks (\$2.38)."

Also in Austria-Hungary a new sugar law went into effect on the 20th of June last. Both this and the German sugar laws are said to have many congruent features, although they differ considerably in several other respects.

The new laws of the German Empire, as well as those of Austria-Hungary, are subjected to much criticism. It is obvious that both are chiefly intended to increase the revenues of the respective governments by subjecting sugar to an excise or tax of consumption. The tax is to be collected in both countries from all kinds of sugar, irrespective of quality, simply by weight, viz, per 100 kilograms: In the German Empire, 12 marks (\$2.85); in Austria-Hungary, 11 marks (\$2.61).

Both countries retain the export bounty (the efforts of the late sugar conference in London to abolish bounties notwithstanding), evidently for the purpose of guarding against the competition of other nations, especially France, which has become a large sugar-producing rival. A well-informed paper (*Die Deutsche Zucker-Industrie*, Berlin) says, in referring to the new laws of Germany and Austria-Hungary:

The modes adopted by both countries differ in their application, though their object is the same. The German Empire retains the beet-tax system, with its implicit bounty, by a higher rating of the drawback, but reduces at the same time the tax on beets from 1.70 marks (\$0.40) to 80 pfennigs (\$0.19), thus lowering correspondingly the present export bounty; while Austria-Hungary frankly allows an export bounty, evading the dual system of taxing one and the same product twice, thus saving much vexation to manufacturers.

In rating the drawback and the export bounty the single-weight system has been abandoned, and a classification is made according to quality, which does not coincide in the two countries.

In Germany the export bounty per 100 kilograms amounts to—

	Marks.	Dollars.
1. For sugar containing at least 90 per cent. sugar.....	8.50	=2.02
2. For sugar containing at least 98 per cent. sugar.....	10.00	=2.38
3. For sugar containing at least 99½ per cent. sugar.....	10.55	=2.51

Austria-Hungary allows in case of exportation:

	Florins.	Marks.	Dollars.
1. For sugar of at least 88 per cent. polarization.....	1.50	=2.44	=0.58
2. For sugar of at least 93 per cent. polarization.....	1.60	=2.60	=0.61
3. For sugar of at least 99½ per cent. polarization.....	2.30	=3.75	=0.89

For a comparison between the two countries we must confine ourselves, as for Germany, to classes 1 and 3, and as for Austria-Hungary, to classes 2 and 3, as constituting the bulk of production. For 100 kilograms of raw sugar, for instance, the Austria-Hungarian manufacturer receives 3.60 marks (\$0.61), which amount must be paid to him.

petitor, to secure the same amount of bounty, will be compelled to produce a meter centner (50 kilograms) of raw sugar from an amount of beets as low as $7\frac{1}{3}$ (precisely, 7.375) meter centners. Most manufacturers will hardly be able to do so without working up molasses, but the latter increases working expenses considerably per meter centner (50 kilograms), and by these additional expenses the profit of the German manufacturer is diminished. Moreover, he produces a sugar which commands a lower price in the market than sugar manufactured by factories not working molasses. Further, such sugar, especially such as is obtained by means of the *steontianite* (or elimination) process, is liable to the suspicion of the German excise officials, who subject it to a close examination which, under circumstances, may conduce to a refusal of any bounty whatever, and to a classing of the product with an inferior quality of sugar.

Section 41 of the regulations to carry out the German sugar act of July 9, 1887, says:

"The ascertaining of the contents of sugar by means of a chemical analysis shall be required, if there is reason to believe that the sugar to be taxed contains over-polarizing component parts (raffinose, etc.) in quantities comparatively more considerable than is the case with sugars obtained from molasses, especially by way of the *steontianite* (or elimination) process."

The paper from which the foregoing is an extract comes to the conclusion that in Germany, as well as in Austria-Hungary, the new sugar-tax laws will cause much vexation. All factories are to be severely watched, so that no sugar produced and remaining in the respective countries escapes the consumer's tax. In Austria-Hungary stamps are to be attached to all sugar produced at the time the same leaves the factory or enters the public stores. Dealers in sugar are held co-responsible in convincing themselves that the stamp is properly attached whenever they purchase sugar for retailing purposes.

Considerable interest is manifested in watching the effect of the new laws. Doubtless governmental revenues will be increased in both countries, but in industrial circles it is apprehended that the results will not be favorable to a further development of the sugar industry.—BERLIN, *July 20, 1888.*

F. RAINE,
Consul-General.

CORN LAWS OF PORTUGAL.

[Transmitted by Vice Consul-General Wilbor. — Translation.]

Dom Luiz, by the grace of God King of Portugal and of the Algarves, etc. We make it known to all our subjects that the general Côrtes decree as follows:

ARTICLE I. The duties fixed in the general tariff of the custom-house for cereals and corresponding flour, as well as horse-beans, are modified in the following terms:

	Reis per kilo.
Wheat in grain.....	20
Indian corn in grain.....	16
Cereals in grain not specified.....	15
Flour of cereals	30
Horse-beans.....	14

SEC. I. The Government is authorized to raise these duties sufficient to compensate for the

SEC. 2. The Government is also authorized, after hearing the superior council of commerce and agriculture, to reduce the duty on flour of wheat, corn, and rye, when that may be needed to avert an increase in the price of bread or of any alimentary product of cereals, being able also, when that is not enough, to lower simultaneously and in proportion the duties on cereals in grain and respective flours.

SEC. 3. In the terms of the preceding paragraph the Government is yet authorized to diminish to 25 reis the duty on wheat flour when in the Lisbon market the price of soft wheat will be at less than 580 reis for 10 kilograms, and of the regular hard wheat lower than 550 reis also for 10 kilograms.

SEC. 4. The Government will help the furnishing of municipal bakeries in Lisbon, Oporto, and other important populations, granting them —

1. National buildings to establish bakeries therein.

2. Importation free from duties on machines and utensils necessary for baking.

ART. 2. The Government will grant importation free from duties to machines and grinding utensils, bolting and baking, destined to the panification and employment of national wheat. The Government will also grant exemption from industrial contribution for ten years to grinding manufactures, to water or wind mills, which only grind Portuguese cereals.

ART. 3. In the Government railway the tariff for the transportation of wheat, corn, and flour shall be established in a way that the proportion between the unities for cereals in grain and flour shall never be greater than the proportion of 3 to 4.

SEC. 1. The Government will negotiate with private railway companies to obtain tariffs on similar terms.

SEC. 2. The Government will not be able to approve new general or special tariffs in which the same terms be not maintained.

ART. 4. The Government is authorized to establish in the extinct convent of the Carmelites, or on other proper locality on the right side of the Tagus, grinding manufactures of panification and crackers, deposits, store-houses, barns, and stables, according to the plans proposed by the committee appointed by the decree of June 30, 1886. The Government is also authorized to build, when convenient, in the suburbs of the city of Oporto, a similar establishment for the preparation of corn, rye, or mixed bread.

SEC. 1. The establishments spoken of in this article shall furnish the army, navy, corporations, and establishments depending on the home, justice, war, and marine ministries, using as much as possible corn and rye in the alimentation of the northern troops; and may also sell the flour to the municipal bakeries and the public.

SEC. 2. For creating this establishment in Lisbon, and its branch in Oporto, the Government is authorized to spend 60,000,000 reis per annum during eleven years, doing the work and getting materials by contract, according to the regulations of the public administration, and being able to raise by means which it may judge the most convenient, without going beyond the sum fixed in this paragraph, the amount necessary for the rapid installation of the establishment.

SEC. 3. The establishment spoken of in this article shall use national cereals, except in case of *force majeure*.

Dated at the Palace July 19, 1888.

THE KING.

TARIFF REVISION IN SWEDEN.

The protective party having lately come into power in the Swedish Diet, a number of important changes have been made in the customs duties, what is spoken of here as the

The following list shows the articles upon which the duty has been increased, with the old and new rates of the same:

	From. <i>Kr. Ore.</i>	To. <i>Kr. Ore.</i>
Accordeons, per kilogram	0 50	1 00
Acid, sulphuric, per kilogram		0 00½
Albums, per kilogram.....	1 00	2 00
Alum, per 100 kilograms.....		1 25
Basket work, fine, per kilogram.....	0 60	1 00
Blacking, shoe, etc., per kilogram.....	0 05	0 15
Books, printed in Swedish language, bound in paper or cloth, per kilogram	0 25	0 50
printed, all others, per kilogram		2 00
blank, per kilogram	0 20	0 25
covers	0 60	1 00
Brandy and spirits, in barrels, of potatoes or other vegetables, per liter	0 60	0 75
rice, per liter.....	0 60	0 75
sugar, etc., per liter.....	0 60	0 75
grape, of French manufacture and directly imported, per liter	0 45	0 55½
grape, otherwise manufactured or imported, per liter	0 50	0 75
of other fruit, per liter.....	0 50	0 75
all not specified, per liter.....	0 90	1 11
Bread, fine, cakes, etc., per kilogram	0 15	0 30
all other, per kilogram		0 04 ³ / ₁₀
Breadstuffs, wheat, rye, corn, barley, per 100 kilograms.....		2 50
oats, per 100 kilograms		1 00
malt, per 100 kilograms.....		3 00
all other, per 100 kilograms.....		2 50
ground, bran, per 100 kilograms.....		0 30
ground, vegetable meals, per 100 kilograms		4 30
ground, groats and meal, per 100 kilograms		4 30
Brushes, of unpolished or unpainted wood, per kilogram.....	0 10	0 12
Butter, including artificial, per kilogram.....		0 20
Caviare, per kilogram.....	1 80	2 50
Cement, per 100 kilograms		0 20
Chalk, ground, etc., per 100 kilograms	0 00½	1 00
Cheese, per kilogram	0 07	0 20
Chestnuts, per kilogram	0 15	0 25
Cigars and cigarettes, per kilogram	3 00	4 00
Cordage, per kilogram		0 10
Ethers, per liter	1 40	1 75
Fancy goods, per kilogram	0 80	2 00
Fans, per kilogram.....	1 20	5 00
Flowers, natural	0 30	2 00
Furs, sewed and made up, finer varieties, per kilogram	*2 40	4 00
sewed and made up, common varieties, per kilogram	*0 25	2 00
Furniture, pine, spruce, etc., unpainted, per kilogram.....	0 02	0 05
pine, spruce, etc., painted and varnished, per kilogram	0 04	0 10
ash, birch, oak, and other native woods, per kilogram.....	0 08	0 30

	From. Kr. Ore.	To. Kr. Ore.
Glass, jars, bottles, etc., light-green and half-white, per kilogram...	0 02	0 06
ports for vessels, per kilogram.....		0 07
powdered, per kilogram.....	0 10	0 02
Glue, per kilogram.....	0 50	0 20
Guns and finished parts of same, per kilogram.....	0 06	1 50
Ink, per kilogram.....		0 10
Iron and steel, pig and cast, per 100 kilograms.....		2 00
beam, angle, etc., weighing less than 20 kilograms per meter, per 100 kilograms.....		2 50
rolled and wrought bar, etc., per 100 kilograms		2 50
railroad fish-plates, bolts, and spikes, per 100 kilograms.....		6 00
plate, roller, or wrought, of 3 millimeters or over thick, per 100 kilograms.....		3 00
plate, roller, or wrought, of less than 3 millimeters thick, per 100 kilograms.....		4 00
plate, roller, or wrought, ground, polished, or galvanized, per 100 kilograms.....		6 00
anchors, etc., per 100 kilograms		4 00
chains, 25 millimeters or over in diameter, per 100 kilo- grams.....		3 50
chains, 6 to 25 millimeters in diameter, per 100 kilograms		7 00
chains, under 6 millimeters in diameter, per 100 kilograms... 0 10		10 00
spikes and nails, 45 millimeters or over in diameter, per kilogram	0 03	0 04
screws, 75 millimeters or over in diameter, per kilogram.....		0 20
screws, less than 75 millimeters in diameter, per kilogram		0 30
railroad materials not specified, per 100 kroners.....		10 00
Lard or fat, per kilogram.....	1 20	0 20
Liqueurs, per liter.....		1 50
Live stock, horses over one year old, each.....		50 00
cattle, each		10 00
sheep, each		1 00
hogs, per kilogram		0 15
Maps and charts, Swedish text, printed abroad, per kilogram.....		1 50
Swedish text, printed abroad, mounted and bound, per kilo- gram	0 25	2 00
Masks, each.....		0 50
Meats, fowls, all kinds, per kilogram.....		0 20
other kinds, per kilogram.....		0 07
Music, bound, per kilogram	2 00	1 00
boxes, per kilogram	0 05	3 00
Mussels and oysters, per kilogram	1 00	0 10
Oils, volatile, per kilogram.....	0 02	2 00
not volatile, in other vessels than barrels, per kilogram	5 00	0 05
Organs and melodeons, per 100 kroners.....	1 00	15 00
	80	10 00
		1 50

	From. Kr. Ore.	To. Kr. Ore.
Pitch, per 100 kilograms.....		2 00
Plaster, burnt and ground, per 100 kilograms.....		0 40
worked, per kilogram.....	0 10	0 20
Pork, smoked, per kilogram.....		0 25
all other, per kilogram.....		0 20
Potatoes, per 100 kilograms.....		0 50
Prunes, dry, per kilogram.....	0 20	0 50
Rice and paddy, per 100 kilograms		2 50
Sausage, per kilogram.....	0 25	0 50
Seed, timothy, per kilogram.....		0 05
garden, per kilogram.....		0 50
Shoe-lasts, per kilogram.....		0 10
Shot, per kilogram	0 07	0 10
Sprinklers, per 100 kroner.....	5 00	10 00
Starch, per kilogram.....	0 10	0 17
Toys, wooden, per kilogram.....	1 50	2 00
Type, etc., per kilogram.....		0 25
Vessels and boats, per 100 kroner.....		10 00
Wax, per kilogram.....		0 15
Wire, iron and steel, 1 ½ millimeters and over thick, per kilogram.....		0 04
less than 1 ½ millimeters thick, per kilogram		0 08
Woven goods, jute, unbleached and undyed, per kilogram.....		0 10
hair, per kilogram.....		0 25
Yarn, cotton, double and many threaded, per kilogram.....		0 20
cotton, double and many threaded, dyed and printed, per kilogram.....		0 35
jute, dyed, bleached, and printed, per kilogram.....		0 18
canvas and twine, sized, dyed, etc., per kilogram.....	0 20	0 40
Yeast, per kilogram.....		0 20
All goods not specified, more or less manufacturing, per 100 kroner..	10 00	15 00

The following list shows the few articles upon which the duty has been decreased, with the old and new rates of the same:

	From. Kr. Ore.	To. Kr. Ore.
Aniline colors, after January 1, 1889, per 100 kroner	5 00.....	
Coffee, raw, after January 1, 1889, per kilogram.....	0 26	0 12
roasted, after January 1, 1889, per kilogram.....	0 35	0 20
Oils, not volatile, excepting linseed, by the barrel, after January, 1, 1889, per kilogram.....	0 07.....	
refined petroleum and naphtha, after January 1, 1889, per kilogram.....	0 02.....	
Tea, after January 1, 1889, per kilogram.....	0 80	0 50
Furs, undressed, fine varieties, per kilogram.....	2 40.....	
undressed, common varieties, per kilogram.....	0 50.....	
dressed, fine varieties, per kilogram	*2 40	0 50
Vinegar, after January 1, 1889, per kilogram.....	0 20	0 10
Yarn, jute, undyed and unbleached, per kilogram.....	0 10	0 06

GOTHENBURG, *July 26, 1888.*

ERNEST A. MAN,

Consul.

THE SWISS PATENT LAW.

Switzerland has now followed the example of the other civilized nations of the world in adopting a law for the protection of inventions. As this legislation contains several new and extremely interesting provisions, its text is given below, although it can not go into effect until it has been decided whether a submission to the people will be demanded by the petitions of 30,000 voters, and, in the latter case, until it has been approved by a majority of voters. A period of at least three months will be necessary for fulfilling these formalities. It will be particularly noticeable to persons interested in the subject that only material objects and *not* processes are protected by this law. This feature is said to be due to the efforts of the manufacturers of aniline colors and chemicals whose interests would be injuriously affected by a law as comprehensive as that of the United States, for instance, which protects "useful arts" and "compositions of matter" as well as tools and machines.

GENERAL PROVISIONS.

ARTICLE 1. The Swiss Confederation grants under the form of a patent the rights mentioned in this law to the authors of new inventions, or to their heirs and assigns, which are industrially applicable and which can be represented by a model.

ART. 2. Inventions are not to be regarded as new which, at the time a patent is applied for, have already become so well known in Switzerland that they could be executed and employed by specialists.

ART. 3. No one shall be permitted, without permission of the inventor, to construct the patented article or carry on business with it. If said article be a tool, machine, or apparatus, its use is also forbidden except by permission of the owner of the patent. Such permission is presumed when the patented article is offered for sale without any limiting conditions.

ART. 4. The provisions of the previous article are not applicable to persons who have already used or have made the necessary arrangements for using the article at the time of the application for a patent.

ART. 5. A patent is transferable by inheritance, by entire or partial assignment or mortgage, or by a license authorizing a third party to employ it. Transfers and licenses are valid with respect to third parties only when registered according to article 19 of this law.

ART. 6. The duration of the patent is fifteen years, reckoned from the date of the application. For each patent a fixed fee of 20 francs must be paid, and a progressive annual fee, as follows: For the first year, 20 francs; second year, 30 francs; third year, 40 francs; and so on till the fifteenth year, when the fee amounts to 160 francs. This annual fee is due in advance, and payable on the first day of each year for which the patent is in force. The owner of the patent may also pay in advance for several years; if he abandons the patent before the expiration of the period for which he has paid, the yearly payments not yet due will be refunded to him.

ART. 7. The proprietor of a patent who introduces an improvement on the invention protected by the same is entitled to a supplementary patent, expiring at the same time with the principal one, on payment of a single fee of 20 francs.

ART. 8. The first three annual fees till the beginning of the fourth year shall be paid without means.

(2) When an annual fee is not paid, at latest, three months after it becomes due, the patent office will in each case, but without assuming any responsibility, at once notify the owner when the annual fee falls due.

(3) When the invention has not been brought into use at the expiration of the third year from the date of the application for a patent.

(4) When the patented object is introduced into Switzerland from abroad, and the owner of the patent has at the same time rejected Swiss application for a license based on cheaper prices.

In the two last cases any person proving a legal interest may bring suit for forfeiture of the patent before the court competent in cases of infringement (article 30).

ART. 10. An acquired patent shall be declared null —

(1) If the invention is not new or not industrially valuable.

(2) If the owner of the patent is not the inventor or the latter's lawful successor; but the person taking out the patent is presumed to be the inventor until the contrary is proved.

(3) If the name given to the invention in the application indicated other than the real object of the invention, whereby it was the intention of the applicant to deceive others.

(4) If the representation of the invention (description and drawings) accompanying the application is insufficient to enable experts to carry the same into operation, or does not correspond with the model.

Any person proving a lawful interest may bring suit before a competent tribunal for the nullification of the patent.

ART. 11. A non-resident of Switzerland is entitled to acquire a patent and the rights attached thereto only when he has an authorized agent in the country. The latter is authorized to represent his principal in the proceedings under the law and in the legal controversies arising from them. Jurisdiction of complaints against the owner of the patent belongs to the tribunal where such representative has his domicile, or, if he has no domicile, to the court where the patent office is established.

ART. 12. The owner of a patent for an invention which can not be utilized without making use of a previous invention may require a license from the owner of such earlier invention when three years have elapsed since application for a patent for the same was made, and when it is of considerable industrial importance. If the license be granted, the owner of the earlier patent may, in his turn, require a license authorizing him to make use of the later invention, on condition, however, that the latter has an actual relation to the earlier one. The federal court has jurisdiction of controversies and determines the indemnity or security to be given.

ART. 13. If the public interest requires it, the federal legislature may, on proposition of the federal council or of a cantonal government, declare the expropriation of a patent at the expense of the Confederation, or of a canton. A decree of the Government shall determine whether the invention shall remain the exclusive property of the Confederation, or whether it shall become a common possession.

The federal court fixes the indemnity to be paid to the owner of the patent.

II.—APPLICATIONS AND GRANTS.

ART. 14. Whoever will acquire a patent must transmit to the patent office an application drawn up in conformity with an appropriate formula and having reference solely to the principal object and the details belonging thereto. The title employed must indicate clearly and precisely the essential character of the invented object. The application must be accompanied by —

(1) A description of the invention, which must concisely indicate in a special paragraph the essential characteristics of the same.

(2) Drawings necessary for the proper understanding of the description.

(4) The sum of 40 francs as fixed and first annual fee (article 6).

(5) A list of the papers and objects transmitted.

The application and other documents must be in the French, German, or Italian language. In case the application is rejected the annual fee is returned, together with all the papers, to the person sending them.

ART. 15. The federal council may require the deposit of models for certain classes of inventions.

For the execution of this and the previous article the federal council shall issue rules and regulations which in particular shall contain more detailed provisions in regard to the requirements of paragraph 3 of article 14.

ART. 16. A provisional patent is issued to an applicant on his fulfilling the requirements of paragraphs 1, 2, 4, and 5 of article 14. This provisional patent secures to its possessor, for the period of two years from the date of the application, the right to a full patent, whether the invention has meantime acquired publicity or not. The owner is not, however, entitled to sue for infringement or use of the invention. Before the expiration of the two years he must acquire a final patent by furnishing the proof required by paragraph 3 of article 14; otherwise the provisional patent becomes void. The final patent is not retroactive. Its duration is reckoned from the date of the provisional patent.

ART. 17. Every application in which the conditions prescribed by articles 14, 15, and 16 are not fulfilled shall be rejected by the patent office. An appeal from such a decision lies, within four days, to the executive department, under whose charge the patent office is placed.

If, for one of the reasons mentioned in article 10, the patent office regards an invention as not patentable, the applicant shall be confidentially notified of the decision, and he may then maintain, withdraw, or modify his application.

ART. 18. A full or provisional patent, application for which has been made in the proper manner, shall be at once issued on the responsibility of the applicant and without guaranty of the existence, the novelty, or the utility of the invention.

The patent office issues to the applicant a certificate attesting the fulfillment of the prescribed conditions to which duplicates of the description and drawings mentioned in article 14 are to be attached, and this certificate constitutes the patent of invention, temporary or final, as the case may be.

ART. 19. The patent office keeps a register which embraces the following details: The subject of the patent granted; name and residence of owners and of their authorized agents; dates of application and of furnishing proof of existence of model; all changes bearing upon the existence, ownership, or enjoyment of the patent. Judicial or legal decisions in regard to extinction, nullity, and expropriation of patents, and to the granting of licenses, are to be registered at the request of the prevailing party.

ART. 20. Every owner of a final patent is required to mark the articles produced in accordance therewith, in a conspicuous place, with the cross of the Swiss Confederation and the number of the patent. Where, owing to the nature of the article, this is not possible, the mark may be placed on the packages. By omitting the marking the owner forfeits his right to sue for infringement.

ART. 21. The owner of a full patent may require that the persons mentioned in article 4 also mark their products with the cross and number.

ART. 22. All persons may receive information, written or verbal, in regard to the contents of the register, and the federal council may prescribe a moderate fee therefor.

Final patents, with their numbers and the names and office imme-

moderate price the descriptions and drawings accompanying the applications. This publication is distributed gratis to the executive departments, the federal court, the cantonal governments for the especial use of courts having jurisdiction of cases of infringement, the higher institutions of learning, and to the industrial museums of Switzerland. It will also be exchanged for similar publications of other countries.

In order to enable the inventor to obtain a patent in foreign countries the publication may, at his request, be deferred six months; but in this case the owner has no legal remedy against infringements until after the publication takes place.

III. — INFRINGEMENT.

ART. 24. A civil or criminal action lies against —

- (1) Whoever imitates patented articles or makes use of them without permission.
- (2) Whoever sells, offers for sale, puts in circulation, or imports the imitated articles.
- (3) Whoever knowingly co-operates in such proceedings or promotes and facilitates them.
- (4) Whoever refuses to disclose the origin of imitated articles found in his possession.

ART. 25. Whoever deliberately commits an act mentioned in the previous article shall be condemned to pay an indemnity, and in addition a fine of 30 to 2,000 francs, or to imprisonment from three days to one year, or to fine and imprisonment within the limits mentioned.

For repetition of the offense these penalties may be increased to a maximum of double those for the first offense. Simple violation of the law through negligence is not punishable; but the indemnity is reserved in cases mentioned in article 24.

ART. 26. Any person proving a legal interest may begin a civil suit under the law. Criminal proceedings take place exclusively on complaint of the injured party, according to the criminal procedure of the canton where the prosecution is set on foot, which may be either that of the defendant's domicile or that in which the offense is committed. No offense shall be twice prosecuted.

No action lies after two years from the commission of the offense.

ART. 27. Upon commencement of either a civil or criminal suit the courts may take such precautionary measures as they deem necessary. They may, in particular, on production of the patent, require a more exact description of the alleged imitated articles, as well as of the tools and apparatus exclusively used in their production, and, if necessary, the seizure of the articles, tools, and apparatus mentioned.

If reasons for a seizure exist the plaintiff may be required to give security before it takes place.

ART. 28. The court may order the confiscation of the objects seized of sufficient value to pay the indemnity adjudged the plaintiff and the fine.

Even in case of acquittal it shall, when necessary, order the destruction of the tools and apparatus exclusively used for purposes of imitation.

It may order the publication of its decision in one or several journals at the expense of the person condemned.

ART. 29. Whoever unlawfully affixes to his business papers, advertisements, or products a designation calculated to produce the erroneous belief that a patent exists shall be condemned, *ex officio* or on complaint, to a fine of 30 to 500 francs, or to three days' to three months' imprisonment, or both, with the double of these penalties as a maximum for repeated offenses.

ART. 30. The cantons are required to determine the seat of a tribunal for civil proceedings under this act, the same having exclusive cantonal jurisdiction.

Appeal lies to the federal court, without regard to the amount in controversy.

ART. 31. The proceeds of fines go to the respective cantonal treasuries.

In case of the non-payment of a fine, the judge shall fix a period of imprisonment : —

IV.—MISCELLANEOUS AND FINAL PROVISIONS.

ART. 32. Citizens of countries which have concluded with Switzerland an arrangement to that effect may, within seven months from the date of a patent application in one of said countries, make an application in Switzerland without prejudice to said application on account of circumstances occurring meantime, such as another's application having been made or the inventions having acquired publicity.

Like rights will be secured to Swiss citizens applying for patents in said countries.

ART. 33. To every inventor of a patentable article exhibited in a Swiss national or international exhibition, protection will be granted for the space of six months from the date of the reception of the article for exhibition, on compliance with the formalities prescribed by the federal council.

When an international exhibition takes place in a country with which Switzerland has concluded an arrangement to that effect, the protection which is secured by the foreign country to a patentable article exhibited there shall extend to Switzerland; but this protection shall not continue more than six months from the date of the reception of the article for exhibition, and shall have the effect described in the foregoing paragraph.

ART. 34. The surplus income of the patent office shall be employed first in founding technical libraries in the industrial centers of Switzerland and in the effective distribution of the publications of said office, and, in the second place, for the promotion of the investigations prescribed in paragraph 2 of article 17.

ART. 35. The federal council is authorized to issue rules and regulations for the execution of this law.

ART. 36. The present law annuls regulations for the protection of inventions already in force in the cantons.

Inventions protected by local legislation at the time this law goes into effect enjoy such protection in the canton in question till the expiration of the period fixed by the local law.

ART. 37. The federal council shall publish this law and fix the date of its going into operation. — BASLE, *July 18, 1888.*

GEORGE GIFFORD,
Consul.

FRENCH AND ITALIAN IMMIGRATION TO THE ARGENTINE REPUBLIC.

France is studying a means to combat Italian influence in the Argentine Republic, hitherto almost completely controlled by French capital and colonists.

Thirty-five years ago an Italian was almost an unknown being in Buenos Ayres. In 1887, out of 137,000 emigrants to the Plata, 4,745 were French and 85,000 Italians.

The first railroad grant in the Argentine Republic, as well as first right to establish a gas work were to Frenchmen. To-day not a mile of railroad nor a single gas work remains in the hands of a French company. Italian products daily increase in number, and are substituted for those of France. France sensibly feels this and seeks to regain its former influence by urging

The French, however, reluctantly yield, but tenaciously cling and want are their

and fortunes of his adopted home. He leaves France to tempt a kinder fate, but with a fixed and unalterable determination to return again to his own land.

In 1842 Bordeaux invited reciprocal commerce with the Plata by accepting the first bales of wool exported from that country. This industry exports yearly to France 300,000 bales of wool and 100,000 bales of sheepskins. South American wool and skins now demand better prices, and are more esteemed in France than those from Australia, formerly quoted at higher figures. Bordeaux sends wines, oils, conserved fruits, and vegetables, and in exchange receives wool, wheat, corn, skins, leather, and hair from Buenos Ayres. — BORDEAUX, FRANCE, *July 31, 1888.*

GEO. W. ROOSEVELT,
Consul.

TOBACCO IMPORTS INTO EGYPT.

The Egyptian Government now decrees that imported tobacco must be accompanied with duly authenticated declaration that it has been produced in the country from which it is exported to Egypt. In default of such declaration a tax of about 10 cents per pound will be imposed. The object of this tax is to protect Turkish tobacco, which the Greeks have been compounding with the products of their own and other countries and sending such compounds into Egypt. The same thing is reported from Malta. Greeks, and probably Maltese, will, I am satisfied, present all the false certificates required, and it remains to be seen how the Egyptian Government will make this decree virtually good. I have just received a letter from a Greek merchant in Anvers, who, having been informed that an effort is being made to introduce American tobaccos into Egypt, suggests that they be not imported direct, but that shipments be made to him at Anvers, where the American product could be subjected to profitable treatment. This proposition looks to fraud against Egypt, to violation of her laws, and I feel assured to the swindling of American consignors. Greek treachery is an inherent quality which has grown in greater ratio in the ascending scale than her national power and influence descended. If Americans send tobaccos to Egypt they will pursue the safest course in making direct shipments and in letting intermediaries strictly alone.

In my report sent with No. 226 I calculated that the Egyptian demand for foreign tobaccos, to satisfy the lack of home production, would begin in September. On this point I have changed my views. Further investigation satisfies me that this demand will not begin before the end of the present calendar year.

JOHN CARDWELL.

THE VANILLA TRADE AT BORDEAUX.

One of the most interesting as well as delicate articles of trade upon the Bordeaux market is that of vanilla, which is imported into France from various countries producing this odoriferous plant.

Vanilla belongs to the family of orchids, and was first found in the forests of Mexico. It is a sarmentose plant, furnished with thick, oblong, glaucous green leaves. The vine sometimes attains a height of 45 feet. The principal center of production of vanilla is the littoral of Vera Cruz. It is also found on the west slope of the Cordilleras, in Java, Mauritius, Seychelles, Tahiti, Cochin-China, India, and in some of the islands of the West Indies.

HARVESTING.

The vine in cultivation begins to bear the third year after planting, and continues to bear for thirty years. Each vine annually produces from forty to fifty-five capsules or seed pods. The harvest commences in the month of April and lasts until June. The pods are gathered before arriving at complete maturity.

PREPARATION FOR MARKET.

There are two different methods in vogue for preparing vanilla for the market. The first consists in harvesting the capsules after they have lost their green tint. Woolen sheets are spread upon the ground, and when thoroughly heated by the sun the pods are spread upon the sheets and exposed to the sun for a certain period. The pods are then put into boxes covered by a cloth and again exposed to the sun. The fruit should become a coffee color twelve or fifteen hours after this last exposure. If, however, this color is not obtained the vanilla is again submitted to the heat of the sun. This process occupies about two months, at the expiration of which the vanilla is packed in tin boxes containing about fifty pods each, and securely packed.

The second process consists in tying together about a thousand pods and plunging them into boiling water, to bleach them, after which they are exposed to the sun for several hours and then coated with oil or wapped in oiled cotton to prevent the pod from bursting. During the drying the pod exudes a sticky liquid, which is expedited in flowing by gentle pressure of the pods two or three times per day. In preparing the capsule for market it loses about one-quarter its original size.

CLASSIFICATION.

Vanilla is classified in four qualities. The pods of the *primeira* or first are 4 to 5 inches in length, and proportionally large. They have a strong and agreeable perfume which

sential salts similar to that found in the pod, and which is diffused on the outside of the capsule. This is called vanilla rime, and is in great demand on the Bordeaux market.

The use of vanilla is known throughout the civilized world. It is used in perfumery and extensively employed in flavoring confectionery and cordials. It is sometimes used as a diffusible excitant, and is supposed to possess powers analogous to valerian, while at the same time it is much more grateful.

PRODUCTION.

The following is a tabulated statement of the production of vanilla in the French colonies during the last seven years:

Years.	Island of Reunion.	Guadeloupe.	St. Marie, Madagascar.	Island of Mayotte.	Tahiti.
	<i>Kilograms.</i>	<i>Kilograms.</i>	<i>Kilograms.</i>	<i>Kilograms.</i>	<i>Kilograms.</i>
1880.....	74,677	3,566	.....	.....	.....
1881.....	62,047	5,102	.....	.....	.....
1882.....	60,510	6,166	.....	996	350
1883.....	90,530	5,605	265	1,100	520
1884.....	61,765	6,166	178	985	1,875
1885.....	84,340	6,492	4,000	1,200	8,341
1886.....	164,358	4,333	8,300	1,180	2,500
Total.....	598,227	37,430	12,743	5,461	13,586

IMPORTATION.

Until 1845 the exportation of vanilla from the island of Reunion was nominally nothing—6 or 8 pounds annually. By degrees the industry increased, until to-day, owing to the excellent quality and quantity produced, Reunion is an important rival and competitor with Mexico.

The importations of vanilla into France from 1880 to 1886 were as follows:

Years.	Kilograms.	Years.	Kilograms.
1880.....	90,102	1885.....	93,264
1881.....	72,139	1886.....	120,016
1882.....	88,594		
1883.....	78,041	Total.....	614,033
1884.....	71,877		

Importations of vanilla into the port of Bordeaux from 1877 to 1886 were as follows:

Years.	Kilograms.	Years.	Kilograms.
1877.....	16,118	1883.....	19,000
1878.....	21,365	1884.....	25,200
1879.....	25,481	1885.....	22,600
1880.....	20,910	1886.....	26,100
1881.....	23,900		
1882.....	22,700	Total.....	225,374

BORDEAUX, August 2, 1888.

COLLIERY STATISTICS OF NOVA SCOTIA. _____ Colliery in Nova

ended December 31, 1887.

COLLIERY STATISTICS OF NOVA SCOTIA.																		
Statement shows the classes and number of men employed, etc., at each colliery in Nova Scotia during the year ended 1900.																		
Company.	Underground.				Above ground.				Construction.				Total.		Average number of tons per cutter.	Average tons per day per cutter.	Average quantity raised per day.	Number of days pits were worked.
	Skilled labor.	Laborers.	Boys.	Days' labor.	Skilled labor.	Laborers.	Boys.	Days' labor.	Skilled labor.	Laborers.	Boys.	Days' labor.	Persons.	Days' labor.				
.....	20	9	5	8,224	2	9	3	4,289	.....	.....	.....	.....	48	12,513	824	2.9	58	283
.....	32	7	8	8,643	4	21	6	7,103	.....	.....	.....	.....	82	16,029	520	2.5	81	204
.....	506	237	142	248,033	80	130	19	62,651	.....	.....	.....	283	1,133	315,911	881	3.2	1,622	275
.....	263	210	81	120,382	66	133	20	62,250	.....	.....	.....	132	776	182,764	876	5.2	1,389	166
.....	5	1	.....	1,395	1	.....	.....	330	.....	.....	.....	250	8	1,975	229	1.1	5.6	201
.....	129	62	69	74,496	32	56	9	30,733	.....	.....	.....	258	359	105,487	1,186	4.2	543	281
.....	2	1	.....	187	.....	.....	.....	.....	.....	.....	.....	.....	3	187	162	1.3	2.7	117
.....	9	3	.....	1,646	8	.....	.....	1,613	.....	.....	.....	.....	20	3,259	852	5.2	47	163
.....	19	.....	.....	6,090	2	3	.....	1,671	.....	.....	.....	.....	27	7,761	1,013	5.6	107	179
.....	115	10	.....	30,137	17	31	.....	14,579	.....	.....	.....	1,157	221	45,873	590	3.2	940	241
.....	7	.....	.....	2,315	.....	.....	.....	274	.....	.....	.....	.....	10	2,589	774	3.2	22	187
.....	101	9	15	21,910	23	24	.....	12,737	.....	.....	.....	.....	176	34,647	787	4.2	425	174
.....	131	14	46	38,674	21	52	.....	22,782	.....	.....	.....	.....	253	61,456	980	5.6	738	106
.....	109	29	33	13,951	32	33	.....	5,931	.....	.....	.....	.....	248	19,882	1,003	9.4(?)	1,032(?)	147
.....	20	2	3	3,827	3	2	.....	9,653	.....	.....	.....	.....	31	5,385	388	2.6	52	209
.....	97	15	30	27,395	17	18	.....	50,583	.....	.....	.....	.....	186	38,409	915	4.7	425	241
.....	230	40	108	91,624	57	85	.....	16,083	.....	.....	.....	.....	563	144,589	712	3.0	708	296
.....	87	31	10	34,880	7	38	.....	.....	.....	.....	.....	.....	180	50,963	701	2.3	240	.....
.....	3	.....	.....	733,824	15	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	1,885	680	586	.....	372	635	.....	304,820	.....	.....	.....	.....	11,050	4,367	1,049,694	.....	.....	3,653

INTRODUCTION OF TRAMWAYS AND GAS IN DAMASCUS.

One of the oldest cities in the world, and one that has preserved Oriental traditions and customs, and proven a formidable bulwark against all encroachments and inroads of western ideas and progress for centuries—Damascus—is about to open her gates and bid welcome to the spirit of enterprise and improvement in the contemplated introduction of tramways and gas, for both of which the necessary concessions have already been secured by Imperial firman, according to an announcement in a recent number of the *Syria*, the official organ of the vilayet of Syria.

Both of these works of public utility will doubtless contribute no little to the physical comforts of the inhabitants of Damascus, who are most enthusiastic over these projected innovations, which they believe will tend largely to enhance the value of real estate within the city's limits, whose population is now estimated at about 150,000. — BEIRUT, *July 31, 1888.*

ERHARD BISSINGER,
Consul.

CULTIVATION AND PRODUCTION OF RICE IN JAPAN.

The Japanese rice farmer devotes great attention and care to the selection of good, sound seed. This is a consideration of primary importance, and no one is regarded by the Japanese as a skillful farmer who sows his land with inferior seed.

HOW SEED ARE SELECTED.

The experienced farmer is guided in selecting seed by his experience, but the young farmer must be governed by general principles until taught by practice, and the general principle is to carefully watch the rice plant as it matures, and when the stalk assumes a perfect green color the time has come to make the selection. At this stage close examination will show that some parts of the rice-head or ear are of a very light yellow color, though other parts retain more of the color of the stalk. It is this latter that the Japanese farmer thinks better suited for seed and which he culls out. The seed should not be selected from plants grown on low, boggy land, nor on land of superior fertility. A medium grade of soil is preferable. Great care should also be exercised in drying the seed, and they should never be stored away in a damp place. To do so will impair their vitality and consequently lessen the yield.

Another important consideration is to have the seed in a proper condition when the season for sowing has come. The preparation for this is commenced about the middle of January. The seed intended for sowing are put in a bag, which is sunk about $1\frac{1}{2}$ feet in water. When possible the bag should always be placed in running water, which is always fresh and supposed to be more susceptible to climatic influences.

the sprouting would be slow. To secure uniformity in sprouting the bag should not be too full of seed, and it is advisable to put a bundle of straw rope in the center of the bag in order to prevent the seed from lying too thick. It must not be understood that bags containing rice for seed should always be sunk on the sunniest side of a stream. Nature, when courted to extreme, is never so sure to confer as substantial rewards as when our demands are conservative. Five or six days before the seed are to be sowed the bag should be taken out of the water. It should remain in the same condition as when taken from the water for one night to let the water pass off. On the second day the ropes around the bag should be loosened, the rice stirred well, and then bind the bag again with ropes and sprinkle water over it. On the third day the rice is dried in the sun for an hour or two and water sprinkled over it again. This process is repeated until about seven or eight seed out of every ten begin to bud, and now it is ready for sowing.

Another way the Japanese have of preparing rice seed for sowing purposes is to bury the bag containing the seed in the ground, the end in view being similar and the agricultural principle being the same. Sandy soil is preferred, and the hole should be about $1\frac{1}{2}$ feet deep. The bag, when put into the hole, should be covered with earth about 6 inches thick. If a sunny spot is selected for burying the bag the level should be somewhat deeper, and *vice versa* in a shady spot. If the farmer has no sandy soil his best remedy is to dip the seed in water for a few hours, mix sand with them, and so shape the hole that he can keep the soil light by the frequent use of water.

PREPARING LAND FOR RICE SPROUTS.

The Japanese rice farmer commences to prepare his ground about the latter part of March. He first marks out as much as he intends to sow for rice sprouts, which should be in an open space, unshaded, and where the air circulates freely, and builds around it a small embankment to hold the water with which the land later on is to be flooded. If the soil is sticky he will turn it to the depth of about 5 inches with an instrument like an American spade, and after the clods have dried in the sun for two or three days break them with the back of the spade and apply the manure (described farther on). Most of the farmers (for their holdings are generally small) use the spade to "break up" the soil. If the farmer, however, can afford it, he owns a pony or bullock, which he hitches to a dagger-like plow and breaks up the soil. After the soil has been leveled and everything removed from it that could obstruct the growth of young sprouts the land is flooded with water from 4 to 5 inches in depth, and at this stage the farmer again hitches his bullock to a harrow and plows through the water, mixing it and the

It requires special attention in order that the seed may not be sown too thick, for the roots of the sprouts should have room to spread before the sprout grows too high, or else its vigor is weakened. The good judgment of the farmer will guide him here. The seed are sown about the middle of April, and within sixty days from this date the young sprouts will grow from 4 to 6 inches, according to the fertility of the soil. When about the height mentioned the sprouts are large enough to take up and set out. The soil to receive them must also be in good condition, and the interval between the sowing of the seed and the growth of the sprouts the farmer utilizes in preparing it. The Japanese thoroughly "break up" the soil and work it into as good condition as possible before planting or sowing. This saves labor after the seed are up and enables the plant to "grow right off." Their wonderful success in producing two or three different crops, year after year, on the same piece of ground, is no doubt due to the habit of thoroughly preparing the soil in the beginning, which obtains so universally among them.

The fields or patches of ground intended to receive the young rice sprouts are similar in appearance to the patches where they are grown. They all resemble squares in an old-fashion Southern garden, and the majority of them are not any larger. The little embankments are around these also, for water is necessary to the successful cultivation of rice, and the sprouts are set out while the fields or patches are covered with water 2 or 3 inches deep.

MANURE, AND HOW APPLIED.

The manure mostly prized by the Japanese consists of human and animal deposits. This is mixed with urine, or a little water when necessary, and applied while in a putrid and liquid state by dipping it from large wooden buckets and pouring it on the plant. When the water is removed from the soil where the seed for rice sprouts have been sown, a manure consisting of ashes from burnt straw, grass, husks, and bamboo leaves, as well as rich dirt, is mixed and, by the aid of a sieve, spread as so much powder over the soil containing the seed to protect them from the ravages of birds. When this is done care should be taken to select straw in a decaying state, for otherwise the roots of the young plants would twine around it and make it difficult to remove. But the Japanese farmer is so skillful in the chemical analysis of manure that it requires an adept in the science of chemistry to follow him intelligently, and I must content myself by adhering to general principles while on this part of the subject. If his farm is near the sea he uses sea-weed and fish as manure, but, as stated, his main reliance, especially near cities, is night-soil and urine, which, with the American farmer, nearly all runs to waste. About the farmhouse everything of this kind is carefully preserved. In the cities the water-closets are unknown, and every night the vaults and urinals are emptied and the contents taken to the country many miles away. All this material is poured into vats placed in the fields to receive it, and covered with straw

buckets, carried to the growing crops, and carefully sprinkled about the young plants. This process is repeated several times during the season. Sometimes piles of rice straw or chaff, or old leaves, are saturated with the mixture and left to rot, when this product is used as the American farmer sometimes puts stable manure under a hill of corn. It is this economy of material, and the application of it in the way pointed out, that has enabled the Japanese farmer to gather as many as three profitable crops, year after year, from the same acre of land, so far back that the memory of man goes not to the contrary.

IRRIGATION.

The rain-fall in Japan is very heavy, varying according to locality from 60 to 100 inches annually. Along the ocean shores, on the alluvial plains, the average amount of precipitation is about 60 inches. At the foot of the mountain ranges it is 70 to 75 inches, and on the great mountain sides it will reach 100 inches. Notwithstanding such a rain-fall, irrigation is an important feature in Japanese agriculture, and has been practiced with marked success for more than a thousand years. The Government records show decrees of the Emperor Sujin, who reigned in the country before the Christian era, regulating irrigation, and his son and successor ordered the construction of 800 irrigating canals in different parts of the Empire. The traveler finds in all parts of Japan, especially the rice districts, large irrigating works, massive and costly in their character, and from a distance looking like double-track railways. In addition to such large reservoirs for holding water, the mountain streams are taken from their beds and carried in ditches winding around the hills until they pour their contents on some narrow terrace or flood some rice field in the plain. By such means the supply of water to the farmer is equalized through the whole year, and the health of the irrigated districts for plants and people is also conserved. Some of the most illustrious names in Japanese history are the names of Mikados who won their way to the hearts of their subjects by instituting and perfecting elaborate plans for the amelioration and advancement of the agricultural classes, among which is the system of irrigation briefly described, and the necessity for which is more and more attested by subsequent experience.

CULTIVATION.

I reserved for this heading an account of how rice-plants are set out and cultivated. As indicated, the sprouts or plants are set out while the soil is covered with water to the depth of 2 or 3 inches. This office is usually performed by women or young girls. When the soil is very good from three to five sprouts make a bunch, and about thirty-six bunches are set out to every 2 1/2 foot square. If the soil is not so good ten sprouts make a bunch, The sprouts should

dig one up in autumn after the rice has been cut and measure the root. If they are as long as 6 inches the space should be 12 inches, the idea being that the roots should not touch or interlace. The first working of this plant takes place about two weeks after it has been set out. This is done with an instrument called *kanjume* (made like a rake and has four iron teeth, each one-tenth inch thick, one-half inch wide, and 5 inches long), by digging between the bunches. After the first working the soil appears rough or cloddy, and in this state it is allowed to remain about ten days, when the uneven surface is leveled with the same instrument. It is thought better not to remove all the water, but let it remain on the surface in small quantities, so as to facilitate the leveling of the soil. The water also contains a manure which reaches the roots of the plant quickly, and carries with it the influence of the temperature, which is very beneficial to the growth and strength of the plant. About thirteen days after the soil has been leveled the third working takes place. At this working it is usually found that small roots have grown on the top of the ordinary roots. These absorb the manure without protecting or benefiting the growth of the plant. They should be cut off. About the time of this third working a small egg may be found, which produces the *seni-mushi*, a small insect destructive to the rice-plant. Care should be taken to remove the eggs, and they should be searched for diligently, or else the farmer sees his rice-plants later on wither, although he is industrious in working and manuring them. The rice-plant requires five different workings. This is the general rule in Japan, but I suppose the condition of the soil has much to do in determining the number of workings necessary.

When the ear of the rice shows a light yellow color it is important that the water be drawn off in order that the soil may dry. By thus drying the soil the best quality of rice can be headed. The rice plant is not, strictly speaking, a water-plant, though it is fond of the water, the application of which is necessary to aid nature and man. The time it requires water most is between the time of replanting or resetting out and its heading. The water during this time will be let on or drawn off, according to the apparent needs of the plant, but it should never be suddenly drawn off, as the manure may flow out with it, nor should it be let on in too strong a volume.

HARVEST.

About the last of August and the first of September the rice farmer puts his reap-hook in order. The yellow golden color of the ear or head of the rice-plant will best tell him when to enter his field and cut down what, for the past several months, has been the object of his greatest care. I have not seen any mowing-machines since I have been in Japan, such as are used in the United States for cutting wheat and other cereals. The way in which the fields are divided off and the small area included within each division would render the use of such machines impossible.

rice is a small, crooked blade, fastened to a short wooden handle, and can easily be wielded by a man with one hand.

The rice, when first cut, if the weather looks favorable, is often spread on the ground and left to dry. This is supposed to be the better plan; but if the weather is unfavorable it is tied into bundles as fast as cut and carried home to dry by hanging the bundles on a long pole supported by forks, which is sometimes done in the field where cut.

The fruit is separated from the straw by a very simple process. The farmer will make an ordinary wooden bench and drive iron pins into one side of the wood forming the seat, then take a bundle of rice and draw it through the iron pins or teeth. The fruit is, by such a process, successfully separated, and falls on a straw matting prepared to receive it. The fruit is separated from the hull by a process equally as simple as that employed in separating it from the straw. After being separated from the straw it is poured on a straw matting spread on the ground and beaten with a flail until hulled.

Now it is necessary to free the fruit from all chaff. To do so the fruit is put into a basket and then poured on a matting or cloth spread on the ground. The chaff is blown off and the fruit falls on the cloth. It is then taken and run through a machine similar to a hopper. But the most peculiar machine for cleaning rice is known as the *usu*, a large wooden or stone mortar, the pestle being fastened to the end of a beam fixed on a pivot, and put in motion by a man treading on one end of the beam. Sometimes the pestle is worked by means of water-power, and there are some mills near this city, for cleaning rice, with twenty or thirty pestles all moved at the same time by water-power. Modern machinery is now being introduced into Japan for the purpose of cleaning rice. There is a large mill in this city with such machinery.

PRODUCTION AND CONSUMPTION.

A very interesting official report on the principal articles of food in Japan has recently been published, and the following statistics and comparisons are compiled from it:

The principal articles of food in Japan are rice, wheat, barley, etc., and next to these come all other cereals and potatoes. Besides these, sea-weed, fruit, and vegetables are consumed. Dividing these into six divisions, viz, rice, wheat, other cereals, sweet potatoes, potatoes, and other articles, the percentage of consumption will be as follows: Rice, 51; wheat, 28; other cereals, 13; sweet potatoes, 5; potatoes, 1; and all other articles not enumerated, 2 per cent. This computation is only approximate, but if the

1 : 16 Japan = 37,778,705, accord-

be estimated at the above rate, the amount of rice consumed will be 21,097,518 koku (5.13 bushels) or 3 go (about 5.1 oy = 1 go) per day for one person, and wheat, etc., 11,582,951 koku. The aggregate product of rice in 1886 was 37,191,424 koku, and the amount imported from abroad was 3,926 koku, making a total of 37,195,350 koku. Of this, 21,097,518 koku is used for food, 1,961,076 koku for *saké* brewing, 554,976 koku for export abroad, and 2,995,932 koku for cakes. Deducting these amounts from the above-named total, there remains a surplus of 10,585,848 koku. The wheat produced in 1886 amounted to 16,033,960 koku, and the import from abroad was 127 koku, which makes a total of 16,034,087 koku. Of this 11,582,951 koku were consumed as food and 657 koku were exported, leaving a balance of 4,450,479 koku, which is supposed to be consumed in other ways. The aggregate export of rice for the last nineteen years, from 1868 to 1886, inclusive, was 3,221,135 koku, valued at 18,531,313 yen (73½ cents in gold is equal to 1 yen), while the import during the same period was 3,572,842 koku, valued at 23,914,067 yen. The amount imported in 1870 was especially large, as it constituted about 60 per cent. of the aggregate of the nineteen years. If we compare the exports of that year with the imports there is a balance in favor of the latter of 5,382,754 koku. But since 1877 the export has been gradually increasing, the export for 1886 totaling a little over 550,000 koku, valued at 3,300,000 yen. If the export is continued at this rate the balance will be equalized in two or three years. Below is given a comparative table of the import and export and of the original value of rice, wheat, etc.

Foreign trade in rice, wheat, etc., from 1870 to 1886.

Articles.	Original value of im- ports.	Original value of ex- ports.	Excess im- ports.	Exports.
	<i>Yen.</i>	<i>Yen.</i>	<i>Yen.</i>	<i>Yen.</i>
Rice	23,914,067	18,531,313	5,382,754	.....
Wheat	69,621	2,728,677	.....	2,659,056
Flour and other grain.....	1,208,926	259,841	949,085	.....

Rice is now selling in Japan at 6 yen per koku. The demand is fair and steady. The facilities for shipping are good, and the charges (freight) to New York range from \$10 to \$22.—OSAKA AND HIOGO, JAPAN, *June 1, 1888.*

T. R. JERNIGAN,
Consul.

RICE CULTURE IN NINGPO.

There is no sugar-cane grown in my immediate district. Rice is cultivated to a large extent. In the early part of April a small patch or bed of ground is prepared by being richly fertilized and thoroughly plowed to a

after which care is taken to keep the soil covered with fully 5 inches of water until the young shoots appear. In fifteen days the shoots are ready to transplant, having in that time attained a height of some 7 or 8 inches. They are then transplanted to the fields, which have been prepared. The preparing of a field for transplanting requires a great deal of care and labor. From the 15th to the 25th of April, when the work commences, the rice fields have a rank growth of wild clover. This is cut down with a crooked knife, something like our briar-hook; then the land is dampened by water from the canals, a wooden chain-pump being placed in the canal and worked by an ox, thus throwing water rapidly into the fields, and the field well plowed. Then the clover, which has been cut, is thickly scattered over the field and plowed under, when water is again pumped on the soil. Then the soil is perfectly prepared by a rake with iron teeth, some 10 feet wide, pulled by an ox, causing the soil to become so very soft that the man and ox have to walk knee-deep in mud. The harrowing, when finished, leaves the land prepared for transplanting the rice from the seed-bed. The shoots of the first crop, when planted, are set out 8 inches apart in rows 16 inches apart. Twenty days after the second crop is set out between the rows, and water to the depth of 2 or 3 inches above the soil is pumped from the canals until about a month before the ripening of the rice; the water fertilizes and keeps down the growth of weeds. In four or five months' time from the transplanting the rice has ripened and is cut with a small, straight knife, with a handle at right angles with the blade. A variety called the "lo mi" is set out about June 1 and ripens late—about the middle of November. From this samshu (wine) is made, and also a cake much relished by the natives.

Poppy is planted about March 1, and taken off about June 1. The field is then prepared and set out with rice. After the rice has been cut and gathered it is then dried in the sun. As soon as well dried it is thrashed out in a box, by beating on its side, the back part being 2 feet higher than the front. The rice being beaten out is again thoroughly dried in the sun and then run through large sieves (made of bamboo), worked by hand, so as to clean it of small straws and dirt.

The rice, or paddy, is now ready for sale or cleaning. It is not cleaned by small farmers. They may now and then attempt to clean a small portion for immediate use, but it does not pay; it is more profitable to sell the paddy and buy rice. Rice cleaning is a trade, which persons learn and follow as a life business, and is attached to all rice hong (shops), some of these giving employment to twenty hands, a few employing many more. The hong employ skillful purchasers, who go into the country and buy the paddy of the farmers, forwarding it to their hong. All large rice dealers

more or less speculators, so grain corners sometimes occur.

which is 5 feet in diameter and 6 inches thick—having a rounded edge. The paddy is placed in the groove and crushed or cleaned by the wheel running over it. This work is done by an ox, which patiently circles round, pulling on a lever attached to the circular stone crusher. A picul ($133\frac{1}{3}$ pounds) of paddy will turn out about 75 pounds of clean rice, the balance being the husk, tailings, dust, chaff, and broken rice.

The paddy (rice) is generally sold by small farmers to the rice dealers, who clean it.

The hulls are used with mortar for plastering houses and fires for cooking; the tailings are fed to ducks, geese, etc.; the dust and chaff is fed to pigs and poultry; the broken rice is ground into flour and sold to confectioners. The production per mow (one-third of an acre), in ordinary seasons, is about 8 piculs of paddy ($1,066\frac{2}{3}$ pounds); the average consumption of a family of six (man, wife, and four children) would be about 6 pounds a day. It is their principal food, and at the present value of rice, would cost 10 cents per diem. The cost of cultivation is hard to ascertain. In this immediate district the farms are small, and are owned by large landowners, who rent them to smaller farmers on shares, the landowner furnishing the tools and fertilizers, the renter furnishing ox, labor, etc., and also gathers the entire crop and pays the landowner one-half of the entire production for rent; consequently the renter and his family work the land. There are no supply merchants, but a farmer can borrow money if he has stock. A middle-man is consulted; he arranges with the capitalist, who takes a pledge on the stock. The middle-man is witness and security; he is paid brokerage. The farmer pays the capitalist 2 per cent. per month for the money he procures. Very few borrow; they support themselves by the sale of poultry, eggs, and vegetables. Day laborers for the farm can be procured for 10 cents a day, including meals. There is no expense for fencing—the country lays open, the stock is kept up and not permitted to interfere with growing crops.

As an article of commerce it has no value, the amount produced in this part of the province being insufficient to supply the consumption (as cotton is grown to a considerable extent), and consequently a large quantity is imported from Chinkiang in junks. Tribute, in lieu of rice, is paid in bullion. Freight through to Canton by junk is 23 cents per bag of 200 pounds.

The present value of rice is \$3 per 200 pounds, this being the price for the ordinary rice raised by the native farmers. The extra-cleaned, full-grained, such as used by foreigners, is worth more—being imported from Canton—about 5 cents per pound. There is but little fluctuation in the price during the year, except there is a short crop—in that case the speculator makes his corner and advances prices from 25 to 50 per cent., according to the wants of the consumer.

Sugar is imported from Swatow, Foo-Chow, and Formosa, all native grown and manufactured. The white (C) is the best.

per pound; crushed and loaf (foreign) sugar from 10 to 12 cents per pound, retail. The money values, as given in this report, are based on the Mexican dollar, which is the currency here. — NINGPO, *May 1, 1888.*

THOS. F. PETTUS,
Consul.

PRODUCTION AND CONSUMPTION OF RICE IN CHINA.

Rice is the chief product of the soil of China, as it is also the chief article of food of the people. The two varieties of the rice-plant, known as the "upland" and the "lowland," are both cultivated in this district, but the great bulk of the production is the lowland rice.

The tribute sent to Peking for the Imperial use is, for the most part, of the upland variety. This is grown on high dry ground, requiring little or no irrigation. The labor of producing upland rice is less than half, probably a third, of that required for the lowland. The soil is prepared by the plow, after having been thoroughly manured. The seeds are sown in March, and the soil is dug up between the drills from time to time to keep it loose and free from weeds. During the growth of the plant liquid fertilizers are applied to the roots three or four times. It is harvested in September. Soil which will produce wheat and barley will grow the upland rice. A good yield is about 30 bushels to the acre. The weight of a bushel of this rice, hulled and cleaned, is about 60 pounds. As the upland rice is nearly all sent as a tribute, it does not come on the market, and I can give no quotations as to its price.

LOWLAND RICE.

The lowland rice requires an abundance of water in its cultivation, and is grown in the plains and valleys.

The Chinese are rather gardeners than farmers, the farm lands being small in size, rarely more than two or three acres in extent. Their agricultural implements are few and simple, of the rudest and most primitive pattern, the same they have used for centuries without improvement. The farmer makes up by hard labor and constant manuring for any lack of knowledge and the disadvantages of poor implements. They use the hoe more than any other implement. It has a broad wooden blade with an iron edge and a long stout handle. It is used to dig, as well as to break the sod by a blow; its weight makes it effective. The plow is made of wood guarded with iron, which makes a furrow 5 or 6 inches deep and about as broad. It is drawn by a buffalo, which is attached by a rude gearing and guided by a line through his nostril. The harrow is a heavy stick, furnished at one end with a single row of wooden teeth set in a sort of frame-work of bamboo. Cradles, scythes, and the implements generally in use in America are unknown to the Chinese. Machinery for cleaning, hulling, or

early in March. The ground is broken by the hoe or the plow, when the water is turned on to the depth of 2 or 3 inches. A few days after it is harrowed and made level, all lumps of earth being carefully broken, then it is ready for planting. Several weeks previous to this, however, a small patch of ground is broken up and flooded, when the seed-rice, which has been soaked in water for a short time, is thickly sown on it. In a month this has taken good root and stock and is ready for transplanting. The farmer then takes this growing rice, wading in the mud for this purpose, divides it carefully into small bunches tied with a piece of rice-straw, and transplants it in the ground prepared for it, a few spears together in rows a few inches apart. The women of the farm do much of this work. The plats are constantly supplied with water for about two months, when they are drained off and allowed to dry. In September the rice is ripe and ready to be gathered, which is done by hand with an implement something like an old-fashioned reaping-hook or bill-hook. The cultivation of rice from beginning to end is accompanied with great labor. The yield per acre is about 500 pounds from 75 pounds of rice sown, gross, that is, unhusked rice, about 25 bushels.

For thrashing the rice they have what are called thrashing-floors, a level space smoothed over with a layer of mixed lime and sand with cement added, and well pounded. The surface of this floor is a little inclined and has a raised curb around it. The thrashing is done by unshod oxen or with flails. Husking rice is done by means of a stone roller revolving in a stone mortar and has to be gone over five or six times. Five piculs of unhusked rice yield $2\frac{1}{2}$ piculs of clean rice. About 5 piculs can be husked by one man per day. The husks are used for fuel.

FERTILIZERS.

Fertilizers which are repeatedly used in the early stages of the cultivation of rice are made from night-soil mixed with earth. Thousands of people are engaged in gathering the night-soil from cities and towns and transporting it to the country. This is done when at a distance by donkeys, with a covered tub slung on each side, and generally by coolies with buckets slung on each end of a pole across the shoulder. The droppings of horses and cattle are carefully gathered also for this purpose. Bean-oil cake is also used as a fertilizer. The farmers provide large tanks as receptacles for this manure.

IRRIGATION.

To maintain a water supply for the rice fields the farmers usually club together and make large pools to receive the rain for common use. It is then, when required, supplied to the fields by pails; sometimes by water-wheels worked by treading with the feet. Where a natural streamlet exists it is utilized by conducting it through ditches or bamboo pipes to the fields. The Chinese have no system of irrigation as in Japan, where it is elaborate and complete and has been established for centuries.

The cost of the ground or lease per acre is from \$7 to \$10 per annum.

The consumption of rice per family of five persons is about 5 pounds per day. The present price of good rice is \$3 per picul of 133 $\frac{1}{3}$ pounds. It has ranged during the last ten years from \$2.50 to \$4.50 per picul, but does not vary much during the year. Three kinds of rice, exclusive of the upland, are grown in this consular district in the following proportions:

Sienni, ordinary eating rice, seven-tenths; *Nomi*, fermented and distilled into wine and spirits, one and one-half tenths; *Nanmi*, for cakes and soup, one and one-half tenths, same as ordinary rice.

Rice is brought to this port mainly by water, by the river and through the canals. Powdered quartz, limestone, and water are frequently mixed with it by the dealers to increase the weight. The freight from Chinkiang to Canton or Tientsin; the principal consuming markets, is about 12 cents per picul. It is usually packed in straw bags containing 100 pounds. Rice pays an inland revenue tax, very variable according to distance, direction, etc., about 15 to 18 cents per picul.

I have no data as to the quantity or value of the total rice crop of the district.

By Imperial decree it is forbidden to export rice to foreign countries.

Sugar is not cultivated in this district.—CHINKIANG, April 26, 1888.

A. C. JONES,
Consul.

RICE IN THE PROVINCE OF KIANG-SU.

The plain throughout the province of Kiang-Su produces the best quality of rice grown in China. The climate of this great rice-producing section is semi-tropical, the temperature ranging from a few degrees below freezing in the coldest weather to 100° in the hottest. But little rain falls from July to midwinter. In February slight snow-falls occur. A winter without snow is regarded by the natives as a calamity, so far as agriculture is concerned. March and June are usually rainy, and during the latter month the heat and moisture together are very favorable to vegetation.

The seed rice is usually soaked and planted thick in a small plot of ground specially prepared, and when it is up a few inches it is transplanted over the fields in straight lines close to each other. From planting to harvesting time farmers endeavor to keep their crops free from weeds and insects and well supplied with water. Planting usually takes place in March and harvesting in June. Aside from a rude plow used in preparing the ground for the plants, and a water-jerking apparatus for flooding the fields, no machinery is employed in the cultivation of rice, and the harvesting is done with sickles in the most primitive manner. The culm is cut close to the leaves which are placed upright, but not

There are other ways of thrashing, but are all of a simple form of manipulation, calling for patient toil, without ingenuity. In winnowing the grain a rude machine is sometimes employed, which in construction is not unlike early patterns of the hand-mills seen in America. Another mode is to sift the grain on a windy day, or toss it up against the wind, which blows the chaff away, the rice falling to the ground.

There is nothing in the cultivation of rice in this section of China that commends itself as superior to the methods pursued in America.

An average yield is 1,000 pounds per mow of 7,260 square feet. The consumption depends upon the class of people using it. The laborer who uses rice as a regular diet consumes from $1\frac{1}{2}$ to 2 pounds per day. There are classes too poor to insure as large a quantity as this, and the wealthier people have more of a variety of food, and while rice is their main-stay they use a smaller quantity.

The cost of cultivation is not easily ascertained. After numerous inquiries I find that a farmer will cultivate, say one acre of ground, performing all the labor himself, excepting during planting and harvesting, when he employs two laborers for a period of eight days each. He pays these laborers at the rate of 10 cents a day and food, in all 15 cents a day per man. Thus he pays for sixteen days work at 15 cents per day, equal to \$2.40. From sowing to harvest is about three months. The average crop per acre is about 40 piculs, for which he receives, on an average, \$80 in Mexican money, which, at .759, the rate of exchange fixed by the Government for the current year, is equal to \$63.72. The outlay for labor, taxes, etc., mentioned in this report, refers to Mexican money, which is the circulating dollar of the treaty ports of China.

The actual disbursements on one acre in the course of one year amount approximately to \$5, made up of \$2.50 for taxes and \$2.50 for tools and sundries. An additional expenditure is sometimes made for manure, but farmers usually exchange vegetables for fertilizers when they need more than their farm's supply. In a bad year, when from storm or drought the yield is poor, farmers petition the authorities to remit a portion of their taxes. The petition is usually granted.

The Chinese method of cultivating rice may be divided into ten stages: 1. Preparing the soil; 2. Sowing; 3. Transplanting; 4. Thinning the plants; 5. Removing the weeds; 6. Flooding the fields; 7. Reaping; 8. Thrashing; 9. Winnowing; 10. Pounding the rice, in order to remove the "skin."

There are no foreign exports of rice from this part of China. It forms an important article of domestic commerce, however, and during 1887 there was exported from Shanghai to other parts of the Empire (as custom-house clearances show) 4,200,000 piculs, equal to about 9,000,000 bushels. A large amount is carried in junks of which no record can be obtained.

Of the above quantity 830,000 piculs was tribute rice, which goes to replenish the Imperial granaries at Peking. 

RICE AND SUGAR IN INDIA.

While exact statistics of the production and consumption of rice in British India are not available, yet enough is known to warrant me in saying that the quantity is very great. When we take into consideration the fact that rice is the principal article of food with the native population of British India (estimated at 250,000,000), and that each adult will consume during the year about 500 pounds of rice, and that the entire population will use on the average probably from 200 to 250 pounds each, an approximate idea may be formed of the vast quantities of that staple food-cereal which are consumed by these people. In fact, "rice and curry," as you are probably aware, is a standard dish in this country with the European population also.

METHODS OF CULTIVATION.

Rice is cultivated entirely, as far as I am able to learn, by the native farmers, or "ryots," as they are called here.

The gemindar or landlord is often an extensive landholder, but the tiller of the soil is, as a rule, the tenant of a small patch of ground only. He plows his land (or scratches over it) at least twice with a very rude and small East Indian plow, which has but one handle and costs about \$1, and is constructed somewhat like the old fashioned "bull tongue" plow of early times in the United States. Two crops of rice are raised during the year, but not on the same ground.

The "aus" or early rice, as it is called, is sown in the latter part of April and in the month of May, the time of sowing being controlled to some extent by the rain-fall. This crop ripens and is harvested in the latter part of the following August and the first part of September.

But the principal rice crop is the one that is sown during the rainy season in August and September, and ripens in the following December and January. The rainy season proper in this part of India usually extends from about the middle of June until the middle of October.

The greater portion of the rice crop in this country is pulled up and transplanted (on other ground) by hand, when the plant has grown to the height of 12 or 15 inches. This occurs during the rainy season, and the stalks are set out in small bunches 6 or 8 inches apart.

The rice cultivator depends principally upon the natural rain-fall, and a drought is usually followed by a failure of crops and often a famine amongst these poor and improvident people. There are in some places means of irrigation from canals, but I am informed that artificial irrigation in this country, for some reason, has not been followed with good results when applied to the rice crops.

The cost of cultivating rice in this country is from \$2 to \$2.50 per acre, and the yield of "paddy" (un-

earthen pots and is then dried in the sun, by which process the hull becomes materially loosened. It is then placed in a rude mortar, constructed by digging out an inverted bell-shaped cavity in the end of a good sized block of timber, and the pestle is arranged on the end of a lever which has its pivot in the end of a forked stick set in the ground. It takes two natives to operate this machine—one feeds the mortar and the other manipulates the pestle from the longer and lighter end of the lever until the hulls are removed.

The above-described is the most important piece of machinery that I have seen in use amongst the farmers of this country. They seem quite content to pursue substantially the same methods which were probably in vogue when Alexander the Great conquered their country. And I am assured by well-informed old residents here that the ordinary Indian “ryot” or farmer considers that he would not be showing due respect to the memory of his forefathers if he should have the presumption to endeavor improve upon their methods of farming.

The rice grain of this country, like the wheat, is much smaller and less plump than that grown in the United States; seed of the latter (Carolina rice) has been tried here, but so far with unsatisfactory results. Rice sells here at from 2 to 2½ rupees per “maund” (82 pounds) for ordinary quality, such as is used by the masses of the native population, and counting the rupee at \$0.332 would make it cost the consumer from about four-fifths to 1 cent per pound. But the quality of table rice, such as is used by Europeans and the better class of natives, is worth from \$1 to \$1.50 per maund. The price does not ordinarily vary materially at different seasons of the year, but there is generally a slight depression of values for a time after the harvesting and during the marketing of each crop.

Besides the vast quantities of rice required for home consumption in India, as I have already indicated, it is also an important article of export, as the following figures will show. For the year ended March 31, 1887 (the latest reported), exports were as follows:

Rice in the husk (paddy), 418,772 cwts.; value, 720,117 rupees. Hulled rice, 26,460,500 cwts.; value, 87,648,089 rupees.

The above exports are credited as follows:

	Cwts.
From Bengal.....	5,902,278
From Bombay.....	638,787
From Sindh.....	139,511
From Madras.....	1,564,053
From Burmah.....	18,215,871

Principal countries to which exports were sent:

	Cwts.
United Kingdom.....	8,108,021
Malta.....	1,119,230
Germany.....	128,316
Egypt.....	4,370,150
Mauritius.....	

I notice that a few trial consignments of East Indian rice have been sent to the United States during the past quarter. The Government of India levies an export duty on rice (hulled and unhulled) of 3 annas, a fraction over 6 cents per maund.

SUGAR.

The sugar-cane is extensively cultivated here, and is well adapted to the soil and climate in most parts of India, especially in the alluvial sandy loam of the valley and delta of the Ganges and other similar soils.

The cuttings of the sugar-cane are set out in rows about 2 feet apart each way in the months of June and July, and the crop is not plowed, but is carefully cultivated with a short-handled heavy hoe, the handle being only about 18 inches in length and the blade being considerably heavier than that of the ordinary hoe in use in our country. The cane is cut in December and January and the juice expressed by passing the cane between revolving iron or wooden cylinders. Molasses as well as sugar of good quality is also manufactured to a considerable extent from the sap of the date and "toddy palm" trees in this country.

The native East Indian is proverbial for his fondness of "sweets," and those of them who can afford the luxury use sugar in various forms quite extensively, and large amounts of sugar and molasses are produced and consumed in this country.

EXPORTS.

The exports of sugar from British India for the year ended March 31, 1887, are given as follows:

Sugar, refined, 33,340 cwts., valued at 441,435 rupees. Sugar, unrefined, 953,066 cwts., valued at 4,606,597 rupees. The cost of cultivating sugar-cane is about \$16.50 per acre and the average yield about $2\frac{1}{2}$ tons of cane, worth from \$24 to \$25. The refined sugar of commerce in India (refined here) is of three grades: No. 1, white, crystalized in cubes about one-eighth of an inch in diameter; No. 2, apparently of about the same quality as No. 1, except that it is of finer grain, and No. 3, which is the ordinary brown sugar. No. 1 wholesales at 11.4 rupees = \$3.72 per maund (82 pounds); No. 2, at 10.8 rupees = \$3.48 per maund, and No. 3 at 8.12 rupees = \$2.90 per maund.

The facilities for exporting the products of this country are, as a rule, quite ample. During most of the time that I have been here there have been continuously present in this port over 100 large sea-going merchant vessels.

The present freight rates for rice and sugar to the United Kingdom via Suez Canal are from 30 to 35 shillings per ton. For the same goods, by sail
New York the cost of freight is about \$5 per ton.—CALCUTTA,

Vienna has sent a number of representatives to the Inland Shipping Congress at Frankfort on-the-Main. This city is one of the best places for showing the improvement effected in river navigation. A report which has been published shows some very striking figures in regard to the development of shipping on the River Main and the competing railways in the past two years, during which the River Main has been canalized and provided with fine iron weirs and sluices from Mayence up to Frankfort, a distance of about 20 English miles. In 1886, before the opening of the canalized river, the Main carried 311,586 tons, or 1.1 per cent. of the total traffic; in 1887, after the opening of the canalized river, 15,352,452 tons, or 33 per cent., passed over that route. At the same time, the Taunus Railway increased its traffic from 8,802,222 tons to 11,067,408 tons; whereas the traffic of the railway on the left side of the river decreased from 25,264,272 tons to 19,954,809 tons. The other railways increased their traffic, so that altogether an enormous augmentation of business was the consequence of the new works for the improvement of the River Main.

RICE AND SUGAR IN NEW SOUTH WALES.*

Rice is not grown in sufficient quantities in New South Wales to be regarded as an article of commerce. Several varieties of the plant have been grown to perfection on the land subject to overflow in the northern parts of the colony, but the high cost of labor and the limited area in which it can be grown are the principal obstacles in the way of its profitable cultivation in this colony. The soil and climate of Queensland are better adapted to rice than this colony. It is certain that something like success has attended the efforts to grow the plant here, and the home-grown product is said to be of good quality and to sell at a less price than the imported article. No returns, however, were collected by the Government of the extent of its cultivation until 1887, when the annual yield was given at 24,286 bushels. The quantity of rice annually imported into New South Wales is between 6,500 tons and 7,500 tons. The imports into Queensland amount to about 2,300 tons. The bulk of these imports comes from Hong-Kong and China. Small quantities also arrive from India and Japan.

The subjoined table shows the quantity and value of rice imported into New South Wales for each year from 1878 to 1887 inclusive:

Year.	Quantity.	Value.	
	<i>Tons.</i>		
1878.....	6,080	£90,036	\$438,155
1879.....	4,710	77,306	377,204
1880.....	4,619	80,826	393,339
1881.....	6,801	117,707	572,821
1882.....	6,480	101,434	493,628
1883.....	5,052	78,188	479,582
1884.....	8,083	126,158	613,948
1885.....	6,835	92,160	448,491
1886.....	6,640	91,641	445,966
1887.....	7,564	102,700	499,789

*I have been aided in the preparation of this

The cultivation of sugar-cane in New South Wales is confined to the northern coast districts and particularly to the rich alluvial lands bordering on the Clarence, Richmond, Tweed, and Brunswick rivers. The soil and climate of these districts are especially adapted to the growth of sugar-cane. The sharp frosts, however, of early spring occasionally interfere with the industry.

I have mentioned in several of my reports that sugar was first grown in New South Wales in 1823 by Mr. Thomas Scott, at Port Macquarie. In 1827 that gentleman succeeded in making several tons of sugar out of cane grown by him, but more than a quarter of a century elapsed before anything like a determined effort was made to place the sugar industry on a permanent footing. Indeed, at so late a period as 1863 the total quantity of sugar produced in New South Wales amounted to only 280 pounds. The farmers at that time and for several years afterwards paid more attention to corn (maize) than to anything else except sheep farming. Growing maize proved unprofitable. The price of corn got lower and lower every year, and the farmers began to look about for other kinds of crops, and fixed their attention on sugar. The industry made its first bound in 1868, when the number of acres in cane increased from 647 in 1867 to 2,584 acres in 1868.

The Government began making returns of the number of acres in cane in 1863, but no returns were made of the product of sugar until 1877, when it was 99,430 tons. In 1884 it increased to 204,547 tons, and in 1886 to 239,347 tons, which was the heaviest yield in any one year in the history of the colony. In 1887 it was only 167,959 tons, and this was obtained from 5,915 acres, showing an average production of 28.39 tons per acre. During the year 15,117 acres were under cultivation, but 9,202 acres were returned as non-productive.

The following table shows the number of acres in sugar, productive and non-productive, with the number of sugar mills in operation and the quantity of sugar produced for each year from 1877 to 1887, inclusive:

Area in production of sugar-cane in New South Wales.

Year.	Productive.	Unproductive.	Production in tons of sugar.	Number of sugar mills.	Quantity of sugar manufactured.
	<i>Acres.</i>	<i>Acres.</i>	<i>Tons.</i>		<i>Cwt.</i>
1877.....	3,524	3,231	99,430	50	93,960
1878.....	3,331	3,735	99,978	50	150,744
1879.....	2,949	4,489	104,192	59	163,203
1880.....	3,675	4,102	126,119	65	153,833
1881.....	4,465	6,506	121,616	65	146,003
1882.....	4,983	7,184	128,752	76	159,048
1883.....	?	?	169,192	86	270,000
1884.....	?	?	?	83	280,000

Mr. D. A. Crichton is of the opinion that sugar-cane can not be profitably grown in New South Wales south of the Clarence River. He says that "in the early days of the industry on the Macleay River, which is 100 miles south of the Clarence, a considerable area of cane was planted and a number of sugar-mills established, but it was found that the crops were less reliable than those further north."

According to the returns for 1887 only 175 acres were in sugar-cane in the Macleay district. The returns from the Clarence district for the same year show that there were 5,121 acres. This crop was divided into 375 sugar-farms, and the average yield of cane was 25 tons per acre. In the Richmond district, which includes the Tweed and several other rivers, the area under crop was 9,773 acres, and the average yield was 29½ tons per acre. Out of the total number of acres in cane in New South Wales only about one-third can be relied upon as productive. When the industry was first started the farmers labored under many difficulties, especially in regard to the want of knowledge as to the methods of cultivation and the kinds of machinery to be employed. A number of mills were established in various parts of the colony, but their owners were unable to make them pay. A better state of affairs was inaugurated when the Colonial Sugar Company commenced operations in 1870. This company purchased the latest and best patterns of machinery which could be procured in Europe, and as the capital of the company was unusually large it was enabled to assist the farmers in various ways. The company early adopted the plan of purchasing the cane from the growers as it stands in the field at a fixed rate per ton, thus relieving the farmers of the trouble and expense of cutting and hauling it to market. The price usually paid by the company is from 10 shillings (\$2.43) to 13s. 6d. (\$3.28) per ton, according to the quality and richness of the juice. Farmers who prefer, however, to cut their own cane and carry it to market are at liberty to do so, although very few adopt that plan. For some time the small sugar-mills were kept in operation by the farmers, but now these mills are becoming fewer every year, due, principally, to the large mills of the Colonial Sugar Company doing the great bulk of the business of the colony. The system of manipulating the cane has been completely revolutionized during the last ten years. One large mill is now doing the work formerly performed by a number of smaller ones.

METHOD AND COST OF CULTIVATION.

Sugar production in New South Wales, notwithstanding the various drawbacks, is unquestionably a fairly profitable industry. Land suitable for growing the cane can be purchased at from £30 (\$145.99) to £40 (\$194.66) per acre. When land is leased or rented for sugar growing a rental of £2 5s. (\$10.95) per acre, and in some localities as much as £3 10s. (\$17.01) is charged. The cost of preparing land for cane growing depends on the condition of the land. The cost of clearing ordinary

heavier expenditure than £15 (\$72.99) per acre may be required. The cost of planting the cane and keeping it in order the first year will average £8 (\$38.93) per acre. The average afterwards will not exceed £6 (\$29.19) per acre.

In fairly good seasons the cane is ready for cutting in about eighteen months, but under less favorable conditions fully two years are required before the crop is ready for harvest. The seasons in New South Wales are directly opposite to those in England and the United States, and planting is done in September and October instead of March and April. The cutting season begins in July and lasts three or four months. All the various systems of planting have been tried here—systems followed in wet and dry countries, and in countries subject to fierce wind storms or tornadoes.

Mr. Angus Mackay who has rendered me valuable assistance in the preparation of every one of my reports on agricultural subjects states that "all the methods of sugar growing heretofore adopted are gradually falling into a system suited to the mild and favorable conditions of the Australian climate."

The method pursued is as follows: After plowing, harrowing, and rolling until the soil is reduced to a good condition the furrows are opened with an ordinary swing plow. Marking-sticks are placed the full length of the line to be planted. The plow then passes along and throws out the soil about 7 inches wide and 5 inches deep, the sticks referred to being the guides. The plow again passes back through the furrow, throwing out the soil to the other side, increasing the depth an inch or two. A sub-soil plow (strong single or common plow body), the mold-board having been removed, then passes along the furrow and deepens it 2 or 3 inches more, say 8 inches in all, which is considered a fair depth by most planters. During the time the plant furrows are being opened the plants are laid down along the line to which they are carried, either on pack-horses or in baskets. The usual distances for planting all varieties except ribbon are from 18 inches to 2 feet apart in the furrows. One man picks up the plants from the side of the furrows and places one end at the bottom with the buds at the sides and sloping upward toward himself. The slope of a plant, say of 4 rings or tiers of buds, in all about 14 inches long, are sometimes fixed at about 2 inches higher at the end next the planter. In this manner the plant is placed carefully in the furrow, the soil about it, if rough, being broken down and packed round it with the hand. The planter either covers the plants he puts in the ground with 2 or 3 inches of soil, or has another hand to do it with a hoe, the latter, of course, being the more expeditious. In either case the soil is put on carefully so the eyes or buds may not be injured in
 } . . . step forward and puts his heel at the butt of
 } . . . same way,

plant is about 5 inches under the level of the field. In some cases, when all top plants are used, the upper ends are occasionally allowed to project about 2 inches above the covering soil, but unless it is damp and the plants very fresh they are usually all covered up. Meanwhile the plow has opened the next furrow, which may be 5 or 6 feet from the first, according to the nature of the soil, and the work is thus carried on until the planting is finished. In some cases every tenth or twelfth row is left wide enough to allow the passage of carts; but there is no rule for this, the formation of the ground and the convenience of working the different cane pieces, fields, or patches leading to different arrangements on every plantation. In places tramways are laid down, upon which trucks are run, carrying many tons of cane at a load. These trucks are filled from light carts, which come direct from the men who are cutting, and in this way a vast amount of traveling over and packing of cultivated soil is avoided. Ribbon cane, on account of its sending up from ten to thirty canes from a single shoot, is planted further apart, say 3 by 6 or 4 by 7 feet, according to the strength of the soil and the implements used in working between the rows. The holes for ribbon cane are either run out with the plow or opened with the spade. When the plow is used ten or more furrows are opened, and then it is set to opening other furrows at right angles and at distances decided upon. The places at which the furrows cross are then cleared out with the hoe or spade and the plants put in and covered. The following information in regard to the seasons for planting and gathering the crop, etc., in Australia is supplied by Mr. Angus Mackay. The best time to commence operations as a cane grower is in June.

The temperature is cool then, on an average of about 59° . Rains are common and winds drying, a combination which keeps the soil moist and the surface dry. Clearing, stumping, plowing, and the general preparation of land can be advantageously carried on.

July.—A winter month. Frost is common to the south of the Mary River. Clearing, draining, and general outdoor work; average temperature, 58° ; prevailing winds W. and SW.

August.—Frost at the beginning; towards the close cane may be planted to the north of Brisbane and crushing commences. Average temperature, 61° ; winds NE. and S.; very little rain.

September.—Planting and crushing general. Average temperature, 65° ; winds NE. and SE.; light showers.

October.—Crushing and planting; cane commencing to grow, and active cultivation is necessary to keep the weeds in check. Average temperature, 74° ; winds NE. and SW.; thunder showers.

November.—Push on crushing, planting, and cultivation of young cane. Average temperature, 74° ; winds NE. and SE.; thunder showers; warm weather; horse labor employed wherever possible.

December.—Finish crushing and attend closely to ~~cultivation~~

January.—General cultivation of cane. Planting has been done during this month, but it is generally considered late. Average temperature, 81° winds NE.; frequent thunder showers; at times a hot, dry month.

February.—Summer heat fully felt, and growth of well-cultivated cane very rapid. Average temperature, 82° ; winds SE.; thunder showers frequent and heavy; surface drains a necessity to prevent washing of soil.

March.—Temperature begins to fall (average, 76°); frequent thunder showers and heavy rains call for activity in cultivation; winds NE. and SE.

April.—Active cultivation to get all the canes beyond their soft stage. Average temperature, 70° ; heavy rains common; if dry season the rains usually come at this time; effects of floods to be guarded against.

May.—Drainage to be attended to if the land is wet, and general cultivation. Some growers thrash the cane at this time. Average temperature, 65° ; winds S. and SE.; close weather, heavy rains, and fogs. Cane should be very nearly full grown, and ripens during the winter.

The westerly winds are dry, gusty, and searching, and shelter from them is desirable. Heavy, cold, gusty storms also come from the same quarter. The other winds are favorable to vegetation. Frosts occur during June, July, and the first week of August, and are most severe during calm, clear nights. The nights during the whole year are cool.

Thirty or forty different varieties of plants are in use in Australia. Mr. Mackay enumerates the following varieties, fifteen in number, from which the most satisfactory results have been obtained:

1. *Saccharum officinarum*—Tabor socrat. 2. Tabor rappol. 3. Tabor rappol var. 4. Tabor meera. 5. Tabor poetie. 6. Tabor djoengdjoeng. 7. Tabor lielieu. 8. Chigacca. 9. Troeboe. 10. Belonguet. 11. Salangore. 12. Diard. 13. Bourbon or bamboo. 14. Chinese. 15. The Ribbon (red, yellow, and green).

Mr. Mackay estimates the cost of planting on properly prepared land at about £1 (\$4.86) per acre, divided as follows: Six shillings (\$1.46) for opening flat furrows; 10 shillings (\$2.43) for laying down and planting, and 4 shillings (97 cents) for covering. It must be remembered that sugar-cane does not yield an annual crop; hence, in the Government returns, the yield is given as productive and non-productive.

EXTENT TO WHICH SUGAR IS AN ARTICLE OF COMMERCE.

New South Wales as yet is unable to produce as much sugar as she consumes. The largest yield in any one year was in 1886, when the amount was 239,347 tons. In 1885 it was 204,547 tons, but in 1885 it fell to 105,323 tons, the smallest yield since 1877, when it was only 99,430 tons. The amount imported into the colony during the year 1887 was 26,292 tons of refined.

CONSUMPTION OF SUGAR.

The average consumption of sugar per head in New South Wales is about 102 pounds per annum. In a series of interesting and valuable tables prepared by Mr. Edward Pulsford, of this city, the average consumption per head during the years 1884 and 1885, which he regards as fair average years, was 100 pounds per year, against only $93\frac{1}{2}$ per year for Victoria. The following table, showing the methods by which these results were reached, has been very kindly furnished me by Mr. Pulsford:

SUGAR.		
	Victoria.	New South Wales.
	<i>Cwt.</i>	<i>Cwt.</i>
1884. Imports, duty paid	850,259	597,940
Less exports, under drawback	86,172	11,564
Home production .....	.....	194,956
1885. Imports, duty paid	963,053	561,888
Less exports, under drawback	105,414	19,081
Home production .....	.....	369,280
Average per head in pounds.....	$93\frac{1}{2}$	100
Deduct for sugar in excess of the exports of jams, confectionery, and biscuits.....	1	.....
Add for sugar in excess of imports of jams, confectionery, and biscuits.....	.....	2
	$92\frac{1}{2}$	102

An interesting fact in connection with the consumption of sugar in the two colonies is that sugar is not the only luxury which is more largely used in New South Wales than in Victoria. The population of the two colonies is about the same, but the average consumption of tea, currants, raisins, beer, spirits, tobacco, indeed almost every luxury except coffee is heavier in New South Wales than Victoria. In tea the average annual consumption for the years named, 1884-'85, was 127 pounds for New South Wales against 110 pounds for Victoria. In currants the average consumption was 111 pounds in New South Wales against $98\frac{1}{2}$ pounds in Victoria. The average per head in beer in gallons was $16\frac{1}{2}$ gallons for New South Wales and 16 gallons in Victoria. Tobacco averaged per head in New South Wales 46 ounces against $35\frac{1}{2}$ ounces in Victoria. In coffee the average per head was 11 pounds in New South Wales against 16 pounds for Victoria. Mr. Pulsford, to whom I am indebted for this comparison, is very decided in the opinion that the well-being of the two populations can be shown by their relative spending powers. He thinks these comparisons very significant, and in endeavoring to explain why the people of New South Wales consume more sugar, currants, tobacco, beer, spirits, etc., than the people of Victoria, says:

If the people of New South Wales took more spirits and less tea than the Victorians, the case would look different; but when we find that the

why. Sugars and dried fruits also, which in the form of lollies and cakes represent so much enjoyment to the children, are bought much more freely in this colony. A portion of this excess is probably due to the fact that the population of New South Wales represents a greater effective or working power than that of Victoria. But this is far more than outweighed by the fact that the average duties on the articles are much higher in New South Wales than in Victoria; thus sugar pays 5s. (\$1.22) per 100 pounds duty against only 3s. (73 cents) in Victoria, and spirits pay 12s. (\$2.92) both customs and excise, while in Victoria the excise duty is 8s. (\$1.95) and 10s. (\$2.43). Of course, if the duties in New South Wales on these articles were as low as they are in Victoria, the consumption in New South Wales would be still larger. Why is it that the people of New South Wales can afford to buy so much more tea, sugar, etc., than their neighbors? Could they buy as much as they do if they had to pay protective duties on many of their other purchases? If a man must pay £2 10s. (\$12.16) for a £2 (\$9.73) suit, has he not 10s. (\$2.43) less with which to buy tea and sugar?

In 1886 the output of home-made sugar in New South Wales did not exceed 8,500 tons. The imports entered for home consumption for that year into the colony consisted of 15,599 tons of raw and 218 tons of refined. In 1887 the quantity entered for home consumption was 16,814 tons of raw and 216 tons of refined.

It will be seen at a glance from these figures that the sugar-growing industry of New South Wales will have to make a very great stride before it can supply the home demand. The industry would, doubtless, increase more rapidly if the cane could be grown over a wider range of territory instead of being limited to a few localities in the northern coast districts. Possibly in time some of the inland districts, with the aid of irrigation, may prove suitable for the cultivation of sugar-cane.

IMPORTS OF SUGAR.

The subjoined table shows the quantity and value of raw and refined sugar imported into New South Wales for each year since 1887:

Years.	Raw sugar.			Refined sugar.		
	Quantity.	Value.		Quantity.	Value.	
		Tons.			Tons.	
1877.....	22,841	£570,818	\$2,777,886	317	£12,277	\$59,746
1878.....	27,458	697,234	3,393,089	215	7,457	36,289
1879.....	35,108	834,916	4,063,119	233	8,422	40,986
1880.....	19,765	539,953	2,627,681	157	5,435	26,449
1881.....	27,164	655,722	3,190,505	295	11,948	58,145
1882.....	32,491	838,256	4,079,373	142	5,285	25,719
1883.....	27,527	743,374	3,666,290	98	3,715	18,079
1884.....	33,579	843,385	4,152,998	458	14,523	70,676
1885.....	27,362	500,084	2,433,659	366	10,077	49,040
1886.....	29,981	478,992	2,331,015	218	5,646	27,564
1887.....	25,994	475,958	2,316,250	298	6,897	33,564

Value of sugar imported into

Raw sugar, 1886.

Country.	Quantity.	Value.	
	<i>Tons.</i>		
Great Britain.....	240	£5,208	\$25,344
Victoria	1,801	36,118	175,763
South Australia.....	561	14,445	70,296
Queensland.....	14,620	241,772	1,176,583
New Zealand.....	177	3,252	15,825
Fiji.....	10,056	126,670	616,439
Hong-Kong	1,261	25,360	123,414
United States.....	151	3,236	15,747
Mauritius.....	1,106	22,736	110,644
France	3	70	340
Germany.....	2	25	121
Belgium	3	100	486

Refined sugar, 1886.

Country.	Quantity.	Value.	
	<i>Tons.</i>		
Great Britain	66	£1,547	\$7,528
Victoria	63	1,626	7,913
South Australia.....	20	683	3,324
Queensland.....	26	625	3,041
United States.....	1	20	68
Belgium.....	15	420	2,043
Germany.....	27	715	3,479

Raw sugar, 1887.

Country.	Quantity.	Value.	
	<i>Tons.</i>		
Great Britain.....	704	£13,748	\$36,904
Victoria	2,807	56,104	243,826
Queensland.....	14,794	268,469	1,306,504
South Australia.....	757	16,804	81,776
New Zealand.....	194	4,067	19,792
Tasmania	10	209	1,017
Hong-Kong	2,451	48,494	235,996
China	189	3,312	16,118
Fiji	3,354	50,908	247,739
United States.....	450	8,460	41,170
Germany	203	3,653	17,777
France	57	1,250	6,083
Egypt.....	24	480	2,336

Refined sugar, 1887.

Country.	Quan- tity.	Value.	
	<i>Tons.</i>		
Great Britain.....	93	£1,987	\$9,670
Victoria	114	2,725	13,361
South Australia.....	43	1,211	5,893
Queensland.....	2	50	243
United States.....	26	490	2,384
France	6	134	652
Germany.....	4	96	467
Belgium	10	204	993

EXPORT OF SUGAR.

Thus far sugar growers, as previously stated, have not been able to grow a sufficient quantity of sugar for home consumption, much less for export. It is true enough that sugar is exported, but very little of it is the product of the colony, the bulk of the exports being sent here for transshipment to other places. Out of the total export, 116,061 tons for 1887, only 500 tons were produced here, and this was sent to be worked up in the refineries in Queensland. In 1877 the quantity of sugar exported was 1 ton of raw—the product of the colony—and 4,070 tons of refined sugar, the latter principally of foreign manufacture, valued at £140,469 (\$683,592). In 1878 the exports were 4,228 tons of refined sugar, valued at £170,323 (\$828,877). In 1880 the exports were 5,265 tons, valued at £171,413 (\$834,181). The following year there was a decline to 3,655 tons, valued at £116,944 (\$569,108), and in 1887 the export of refined sugar amounted to only 18 tons, but there were 5,803 tons of raw sugar exported, valued at £110,024 (\$535,432).

The subjoined table shows the quantity and value of raw and refined sugar exported from New South Wales for each year from 1877 to 1887, inclusive:

Raw sugar.

Year.	Quantity.	Value.	
	<i>Tons.</i>		
1877.....	403	£14,040	\$68,325
1878.....	502	15,608	75,956
1879.....	1,522	42,309	205,897
1880.....	1,779	57,625	280,432
1881.....	688	20,521	99,861
1882.....	830	24,685	120,130
1883.....	778	21,902	107,586
1884.....	1,284	32,543	158,371
1885.....	1,846	36,667	178,440
1886.....			220,850

Refined sugar.

Year.	Quantity.	Value.	
	<i>Tons.</i>		
1877.....	4,070	£140,469	\$683,592
1878.....	4,228	170,323	828,877
1879.....	5,281	170,638	830,410
1880.....	5,265	171,413	834,181
1881.....	3,655	116,944	569,108
1882.....	2,438	77,258	375,976
1883.....	2,014	61,429	298,944
1884.....	1,229	37,725	183,589
1885.....	111	3,366	15,894
1886.....	23	745	3,626
1887.....	18	501	2,438

The following table shows the quantity and value of raw and refined sugar exported from New South Wales during 1886 and 1887, with the name of the countries to which exported :

Raw sugar, 1886.

Country.	Quantity.	Value.	
	<i>Cwt.</i>		
Great Britain.....	274	£267	\$1,299
Victoria	56,665	54,506	265,248
South Australia.....	1,716	1,514	7,368
Tasmania.....	5,349	5,159	25,106
New Zealand.....	3,516	3,171	15,431
Queensland.....	2,701	2,677	13,027
South Sea Islands.....	757	711	3,400
New Caledonia.....	2,346	2,173	10,575
Fiji.....	86	84	409
Western Australia.....	1,503	1,479	7,197
Hong-Kong.....	39,251	35,015	170,395
China	1,805	1,806	8,789
United States.....	334	303	1,474
New Guinea	7	7	34
Kaiser Wilhelm's Land.....	5	5	24

Refined sugar, 1886.

Country.	Quantity.	Value.	
	<i>Cwt.</i>		
Great Britain	21	£29	\$141
Victoria	50	75	364
Tasmania	45	79	384
New Zealand.....	27	41	199
South Sea Islands.....	14	29	141
New Caledonia.....	304	482	2,345
Fiji.....	6	10	48

Raw sugar, 1887.

Country.	Quantity.	Value.	
	<i>Cwt.</i>	£	\$
Great Britain.....	183	£172	\$837
Victoria.....	83,686	97,372	473,855
South Australia.....	3,723	3,559	17,319
Tasmania.....	17,779	17,015	82,803
New Zealand.....	723	726	3,533
Queensland.....	3,745	3,538	17,217
Western Australia.....	268	247	1,202
South Sea Islands.....	955	851	4,141
New Caledonia.....	4,062	3,586	17,450
Fiji.....	23	20	97
Germany.....	12	12	58
United States.....	102	90	437
Norfolk Island.....	77	62	301
Hong-Kong.....	273	228	1,109
China.....	11	10	48
Kaiser Wilhelm's Land.....	39	36	175

Refined sugar, 1887.

Country.	Quantity.	Value.	
	<i>Cwt.</i>	£	\$
Great Britain.....	13	£19	\$92.00
Victoria.....	1	2	9.73
Tasmania.....	2	4	19.00
New Zealand.....	20	28	136.00
Queensland.....	63	79	384.00
South Sea Islands.....	10	15	72.00
New Caledonia.....	239	339	1,649.00
Fiji.....	1	2	9.00
United States.....	3	6	29.00
Hong-Kong.....	4	7	34.00

PRICE OF SUGAR.

The price of sugar is not influenced by the seasons, but by the extent of the rates ruling in the outside markets. Prices have fluctuated very little during the last few years. They have ranged from £15 (\$72.99) to £18 (\$87.59) per ton for raw, and from £22 (\$107.06) to £26 (\$126.52) per ton for refined sugar.

PRICE OF RICE.

The best rice imported into Australia is from Japan, and costs about £10 (\$48.66) per ton aboard ship at Yokohama. It comes packed in 56-pound Hessian bags. It is usually quoted at so much per picul (a Japanese and Malay weight of 133⅓ pounds). The fluctuation, like that of sugar, is very small. The price in a measure, depends on the quantity

which usually sells from £7 7s. 6d. (\$35.88) to £7 10s. (\$36.49) per ton. There is always more or less demand for this quality, almost every steamer from Singapore bringing a supply. Considerable quantities of rice are imported for coolies, and this comes from Rangoon, Sagon, and Ballam. It is packed in bags of 256 pounds, and between 10,000 and 12,000 pounds usually arrive here every year for transshipment to Fiji. The Ballam rice is quoted at lower figures than that from Rangoon and Sagon.

DUTIES ON RICE AND SUGAR.

Rice pays a duty of £3 (\$14.59) per ton, and rice flour 1d. (2 cents) per pound. Sugar is taxed at 5s. (\$1.22) per 100 pounds for raw, and 6s. 8d. (\$1.60) per 100 pounds for refined.

COST OF FREIGHT.

The cost of freight from Hong-Kong, Singapore, and Yokohama per steamer to Sydney varies from 12s. 6d. (\$3.04) to 17s. 6d. (\$4.26) per ton. At present the rates are very low, say from 14s. 6d. (\$3.53) to 15s. 6d. (\$3.77) per ton. The cost of freight on sugar from China per steamer is about £1 10s. (\$7.29) per ton, none coming by sailing vessels. The average rate of freight on raw sugar from Java is £1 (\$4.86) per ton. Very little or no refined sugar reaches here from Java, the bulk of the raw sugar being used for refining purposes by the Colonial Sugar Company at Sydney. —SYDNEY, *June 11, 1888.*

G. W. GRIFFIN.

Consul.

RICE AND SUGAR IN CEYLON.

Ceylon does not produce grain for export. Indeed, it imports largely, the figures for local production and imports of paddy and hulled rice averaging per annum about 8,500,000 bushels for production against 6,200,000 imported. About 2,000,000 bushels of this go to provide for the consumption of immigrant coolies employed by European planters, the balance being consumed by permanent residents, numbering 2,700,000. This would provide less than 5 bushels per year for each inhabitant, to say nothing of the paddy that is fed to animals, principally horses, and to fowls, etc.

These figures, if unexplained, would lead to an inference that the Ceylonese were poorly fed, which, however, would be erroneous, as about one and a half million bushels of fine grain (millet, pulses, etc.) are grown, also a great variety and abundance of indigeneous vegetables and fruits, including the food products of the cocoa-nut and other palms—all of which contribute largely to the dietary of the people.

The yield of paddy is comparatively small, probably about 15 bushels to the acre, and crops are often lost through a careless mode of cultivation by which the fields are left open to the elements.

properly a drill, is generally used to little more than scratch the ground as a preparation for planting.

The price of table rice in Colombo at retail averages 3 rupees (\$1) per bushel, and commoner sorts, such as are used by the masses, 2 and 2½ rupees per bushel, *i. e.*, \$0.67 and \$0.83 respectively.

As a matter of fact, the upland rice of Ceylon is more nutritious than almost any that is imported, and, as a rule, the Singhalese *goya* (cultivator) prefers the grain of his own growing to any other, just as some New England farmers prefer the poor wheat they sometimes cultivate with great difficulty to the better article that is so easily and abundantly grown in other parts of America.

The following table, copied from the Ceylon Hand-Book for 1885-'86, gives the different descriptions of grain grown in the island, and the number of months they require for maturity, which, together with the foregoing, is probably about all that can be usefully written on this subject:

<i>Fine grain.</i>	<i>Mos.</i>	<i>Paddy.</i>	<i>Mos.</i>
Badde Amoo	3	Kalloo Dahanella.....	3
Mendirye	3	Soodoo Katyaran.....	3
Soodoo Dahanella.....	3	Rattu Dahawalla.....	3
Rattoo Tanna.....	3	Soodoo Dahawalla.....	3
Godde Rawelle	3	Maha Mawee.....	3
Kalloo Tanna.....	3	Kooroo wee.....	4
Godde Koorowa.....	4	Yattoo wee.....	4
Koorookan	4	Kaloo Katyaran.....	4
Tanna	4	Himity	4
Soodoo Elwee	5	Kalloo hinity	4
Rat Tell or Sooroo wee.....	5	Hondrallawa	6
Kittool Pattel.....	5	Soodoo Hondrallawa.....	6
Godde Hondrawella	6	Surroo wee.....	6
Kalloo Koomaraya	6	Mawee	7
Elwee	6	Happoo Dayerajah	7
Amoo	6		
Handoow Kottau.....	7		
Mee Patell.....	7		

Sugar is not largely produced in the island, there being not over 1,000 acres under cultivation with that product. Much capital, though, has from time to time been invested in that industry, and many plantations were opened in past times both in the low country and in the Central Province, as high up as 1,600 feet above sea level. All of those efforts have proved fruitless, however, except in one instance, at Baddegama, in the Southern Province, where some sugar (not much) is still grown and manufactured for local consumption. Considerable jaggery (a coarse native sugar) is manufactured from palms, *originally kittul* (*Caryota urens*) and palmyra; also from the cocoa-nut in the native gardens and sold in

The imports to Ceylon in 1887 are set forth in the following table, kindly furnished by the collector of customs at Colombo:

	<i>Cwt.</i>	<i>Value.</i>
Sugar, refined, and sugar candy:		
England.....	1,488	
India	11,920	
China and Singapore.....	2,871	
Mauritius.....	422	
Other countries	40	
	16,741	\$168,881
Unrefined:		
India and China.....	19,163	97,703
Palm and jaggery from India	5,576	9,257
	31,480	\$275,841

W. MOREY,
Consul.

COLOMBO, *April 25, 1888.*

SUGAR IN BRITISH HONDURAS.

The sugar industry of the colony of British Honduras was at one time one of the principal sources of wealth for the colony—the exports amounting in the year 1880 to 2,807 tons (English). Since that time the production of sugar for export has steadily decreased, owing, no doubt, to the competition of beet sugar and the low wages of the laborers of Cuba and other sugar-producing countries. The following is the amount of sugar (in English tons of 2,240 pounds) exported from the colony for the years 1879 to 1887, inclusive: 1879, 2,002; 1880, 2,807; 1881, 1,931; 1882, 2,572; 1883, 2,023; 1884, 2,383; 1885, 1,674; 1886, 714; 1887, 952.

The exportation for the years 1886 and 1887 were to the following countries:

Country.	1886.		1887.	
	Pounds.	Value.	Pounds.	Value.
United States.....	572,063	\$18,573	983,670	\$30,004
United Kingdom.....	928,068	38,181	1,022,463	32,966
Guatemala.....	18,517	886	18,125	677
Honduras	41,666	1,995	36,697	1,828
Nicaragua.....	40,592	2,009	53,789	2,333
Bahamas			16,200	695
Caymans			2,750	128
Total	1,600,906	\$61,644	2,133,694	68,631

The low prices caused by the competition above mentioned has had the effect of causing the larger planters to discontinue the growing of sugar for

grind, decided that it would not pay to take it off and turned his cattle loose on it. A few of the smaller planters still find it profitable to make a fair grade of sugar, known in the States as "open kettle," for sale in the colony and surrounding Republics. The duty (3 cents per pound) is a protective one as far as the trade of the colony is concerned. Some of them also make rum, of which there was exported in the year 1886 25,411 gallons, valued at \$39,152. There is probably an equal amount used in the colony. This is a very profitable business, as the molasses and sugar that would be unfit for export can be used for this purpose.

A number of those who have discontinued growing cane have turned their attention to raising fruit for the New Orleans market. Thus far they have been very successful, and the prospects for the near future are very bright.

The taxes on plantations are extremely light, viz, \$1 per year on those of less than 10 acres in extent and \$2 per square mile on those exceeding it. Licenses on stills are \$50 per year on every still of 100 gallons capacity and \$10 additional for every additional 100 gallons capacity, and an excise duty of \$1 per gallon on all rum consumed in the colony.

There is no sugar refined in the colony, and the bulk of it is imported from the United States. The imports of sugar for the year 1886 were: United States, 64,760 pounds, valued at \$2,759; Great Britain, 2,798 pounds, valued at \$168; total, 67,558 pounds, valued at \$2,925. The imports for 1887 were: United States, 55,906 pounds, valued at \$2,337; Great Britain, 2,635 pounds, valued at \$131; total, 58,541 pounds, valued at \$2,468.

There are no export duties levied in the colony at present. The suggestion has been made that an export duty should be levied on fruit, as the mail steamers are subsidized largely on the grounds of giving regular service so as to encourage the growing of fruit for export. The import duty on sugar is 3 cents per pound.—BELIZE, *March 1, 1888.*

ALBERT E. MORLAN,
Consul.

SUGAR AND RICE IN SIVAS.

No sugar is grown in this consular district. Rice is grown to a very limited extent in the neighborhood of Tocat and Amasia. The average annual production in the province of Sivas amounts to only about 35,000 pounds. It is mostly of the yellow variety and poorer quality. Rice is a principal article of food, but is mainly imported from East India and Egypt. The wholesale price averages about $3\frac{1}{2}$ piasters per oka = 5 cents per pound.

I have delayed complying with the Department's circulars, hoping to get
~~the amount~~ yield per annum, etc., of the Amasia
 SIVAS.

WHALERS AT ST. HELENA.

The whalers (all American) engaged in the south Atlantic seas, recruited here as usual twice during the year, and the trading schooner *Lottie Beard*, of New Bedford, made her usual two half-yearly trips from that port to St. Helena, bringing general merchandise, the produce of the United States, and taking from hence full cargoes of oil and bone transshipped from the American whaling vessels.

About 1,000 cases of paraffine oil, the produce of the United States, were imported here during the year from the Cape of Good Hope in addition to what was brought here by the *Lottie Beard*. This article is now being sold here at \$2.50 per case. The customs charge is 25 cents per case.

The annual consumption of flour at St. Helena is about 200 tons, the greatest proportion of which is imported from Australia in sacks, costing, landed here, from \$6 to \$7 per sack of 200 pounds. Not more than about 200 barrels are brought from America. The customs charge is, on sacks, 1 shilling, and on barrels, 2 shillings each.—ST. HELENA, *July 10, 1888*.

THOS. B. FOWLER,

Vice-Consul.

SUGAR AND RICE CULTURE IN THE PHILIPPINE ISLANDS.

Sugar may be said to be the leading production of the Philippine Islands, and in the cultivation of the cane and the preparation of its yield for the markets of the world a greater number of hands are employed than in any other single pursuit. While hemp is considered, perhaps, a very formidable rival of sugar, it requires less labor in the preparation for shipment, and the processes by which it is made marketable are simpler and more easily worked than those necessary in the preparation of sugar. The majority of the native population from the extreme north of the Archipelago to Albay, which is near the southernmost extremity, are engaged with more or less activity in the culture of the cane. South of Albay the country is given up almost exclusively to hemp. The method of cultivation is similar to that adopted by the sugar planters of other countries. When a new field is to be planted the ground is thoroughly plowed with a team of "caribous" or water buffaloes, the only animals used for heavy work. They are cheap and plentiful, and are probably the only beasts of burden that could endure this climate. The plow is usually a very primitive affair—a heavy stick of wood sharpened to a point at one end, with a beam attached by rattan thongs about two feet above the point to which the buffaloes are hitched, and with a handle for the plowman at the upright end, consisting of a round bar of wood inserted in an auger hole. There are a few plows of modern design in use, but none, I believe, of American make. The slips of cane, gathered from an old field, are planted in May, about 2 feet apart in rows, and are left to their fate. Occasionally during the season the weeds are hoed out, but, as the natives work very deliberately and do not exert themselves

is required to prevent the weeds from taking full possession of the field. The cane is cut at any time between December and May that the inclination of the owner or his domestic necessities may prompt. The crop is repeated for several years from the same roots. The cane is crushed in a mill of English or German manufacture, very few planters being without one, and the juice is boiled the proper length of time and poured into cone-shaped vessels called "pilons," which hold about 5 gallons each.

It may be proper to call attention to the fact that nearly, if not quite all, the machinery and agricultural implements in use in these islands are of German or English manufacture, as the American and Spanish prices for such articles are considered excessive. No American manufacturer can hope to compete with the English or German in this part of the world until the cost of production and export is so reduced as to enable him to offer his goods at lower prices. I find that American goods are preferred here to those of any other country, as they are considered better in every respect, but not enough so to warrant the payment of the prices asked. It is considered very probable that within a short time there will be a great market here for agricultural implements and other machinery, as two railroads have been projected and there are other indications of material progress and enlightenment, and American manufacturers can gather a large share of the harvest if it is possible for them to make their prices somewhere near those of their English and German competitors.

In the bottom or apex of the cone-shaped pilon referred to is a hole about an inch or an inch and a quarter in diameter, and when the boiled cane-juice has hardened, the sugar maker inserts one finger in this hole, breaking the crust of sugar which has formed over it, and releasing the dark thick molasses from the lower center of the sugar-cone, where it has settled and will not crystallize. This leaves in the pilon a partially hollow cone of hard dirty-brown rock sugar about 2 feet high and about 12 or 14 inches in diameter at the base. The molasses, after exposure to the air, thickens to about the consistency of "mush," and the major portion of it is shipped to England as "wet sugar," where it is used quite largely in the manufacture of different articles of food, in brewing, and for other purposes for which it is not in demand in the United States. Very little of it finds its way to our country.

The hard or cone sugar is used by the natives just as it leaves the pilon, being broken into small lumps with which to sweeten their food. For shipment abroad, and for the consumption of resident foreigners, it is passed through various processes of refinement, producing four grades of sugar, viz: Second white, extra, superior, and taal. None of the second white was shipped to the United States last year, but there was shipped to the Atlantic ports and San Francisco 537,720 piculs of the extra, 1,418,570 piculs of the superior,

than Luzon, and about the same average amount of rice. A reasonably fair estimate would be from 13 to 20 piculs of sugar to the acre and from 30 to 40 cavanese of rice, or 3,750 to 5,000 pounds.

The consumption of sugar is comparatively small, the natives using very little of it in their food. Their diet is principally rice, fish, yams, and fruit, with a little meat sauce or gravy occasionally. The sugar they use is the brown rock as it comes from the pilon. Only a rough estimate of the consumption can therefore be given. Quite a large proportion of the population of these islands is composed of savage tribes, who inhabit the mountainous districts and who do not recognize nor submit to the dominant authority. The Spaniards have never undertaken to subdue them, for reasons best known to themselves, and as the natives do not molest them unless they venture too far into the mountain fastnesses all parties get on quite peaceably. These tribes undoubtedly consume some sugar, which is probably obtained from the civilized natives. Considering the amount of refined sugar—the product of a refinery operated by an English corporation at Malabon, near Manila—consumed by the foreign residents, a comparatively fair estimate of the consumption would be 2 pounds per family per week. Estimating on the basis of a total population of 7,636,632, the figures given by the last census report, with an average of four persons to a family, would make the total consumption for 1,909,158 families 3,818,316 pounds, or about 32,000 piculs or 2,000 tons per week.

In estimating the cost of cultivation we find that labor is a very uncertain factor to deal with, owing to the fact that the almost invariable rule is to work sugar plantations on shares. Nearly all the cultivated land is owned by foreigners, who leave to the natives small patches upon which the latter build their bamboo huts and make their homes. The whole family work in the field, and they turn over to the owner such a proportion of the cane or raw sugar as may have been agreed upon for rent. Of course, there is no regular scale of shares, but the owner usually manages to get the heaviest end of the deal. The natives are simple, improvident creatures, whose wants are few and who can easily live on 2 or 3 cents a day. The torrid climate renders clothing unnecessary, except to fulfill the requirements of modesty. The numerous streams teem with fish. Rice is cheap, and yams, bananas, and various other nutritious vegetables and fruits grow wild everywhere in abundance. Hence the unsophisticated native is willing to take very little for his share of the produce of his patch of ground. It has been estimated that the average cost of producing sugar is from \$1.25 to \$2 per picul. The highest selling price here last year was \$4.25 per picul and the lowest \$2.87½, Manila currency.

As an article of commerce sugar ranks next to hemp. Last year there were 2,866,383 piculs exported, and in 1866 2,972,789, while in 1885 the amount exported was 3,255,850. The smallest amount shipped in one year during the past twenty was in 1861.

1881, when the figures reached 3,362,572 piculs. Of last year's shipments 1,975,957 piculs went to the United States; 478,193 to England; 72,165 to Spain, and 340,068 to China. In 1886 2,158,227 piculs went to the United States, while England received 423,174; Spain, 87,096, and China 304,292. In 1885 the United States received 2,296,418 piculs; England, 532,666; Spain, 66,769, and China, 359,970. Of last year's shipments to the United States, 72,000 piculs went to California, and the balance (1,903,957) was about equally divided between New York and Boston. In 1886 California received 64,000 piculs and in 1885 77,260. I am informed that Spreckels, of San Francisco, has contracted for a large amount of sugar to be shipped from here this year; 161,100 piculs have already gone to that port since the 1st of April, and more is now being loaded.

As hemp has generally been considered the leading product of the Philippines, the following table, showing the comparative shipments of that article and sugar, may be of interest:

Sugar.

Years.	Atlantic ports of the United States.	Great Bri- tain.	Califor- nia.	Continent of Europe.	Austra- lia.	Singa- pore.	China.	Total.
	<i>Piculs.</i>	<i>Piculs.</i>	<i>Piculs.</i>	<i>Piculs.</i>	<i>Piculs.</i>	<i>Piculs.</i>	<i>Piculs.</i>	<i>Piculs.</i>
1881.....	1,266,696	1,742,503	79,190	151,541	49,920	37,454	35,268	3,362,572
1882.....	1,214,519	1,074,858	33,300	66,401	29,940	10,400	23,533	2,451,951
1883.....	2,226,503	884,664	141,980	147,431	.....	.....	2,921	3,403,499
1884.....	1,235,050	299,541	199,000	129,163	.....	.....	104,045	1,966,799
1885.....	2,219,158	532,666	77,260	66,796	.....	.....	359,970	3,255,850
1886.....	2,094,227	423,174	64,000	87,096	.....	145	304,147	2,972,789
1887.....	1,903,957	478,193	72,000	72,165	1,420	134	338,514	2,866,383

Hemp.

1881.....	506,722	297,526	39,000	894	19,092	4,518	1,152	868,904
1882.....	353,042	285,038	28,600	318	33,504	5,390	1,452	707,344
1883.....	353,340	334,302	18,800	170	33,732	5,010	1,516	746,870
1884.....	336,148	427,154	14,862	1,422	26,140	4,040	5,852	815,618
1885.....	388,618	381,838	16,134	1,222	26,744	700	19,004	834,260
1886.....	346,122	328,296	26,300	1,726	19,474	760	20,686	743,364
1887.....	491,690	454,576	31,056	4,082	29,596	2,160	16,786	1,029,946

There is no regularity in the price of sugar, nor is it governed by local conditions. The highest price reached during the past twenty years was in 1877, when it ranged from \$6.75 to \$4.37½ a picul, Manila currency. The lowest was last year, when, as stated above, the highest price was \$4.25 and the lowest \$2.87½. The price for dry sugar is fixed by the New York market for wet by London. All the sugar shipped to the United States is taken on

by coasting vessels from the smaller ports and by steamer from Iloilo and Cebu. In 1886 Cebu shipped direct to the United States and Europe 290,240 piculs and last year 285,040. Iloilo shipped 1,334,298 piculs in 1886 and 1,244,831 in 1887. With the completion of the Manila and Dagupan Railroad, it is expected that a district will be opened to commerce that will largely increase the receipts of sugar at Manila from the interior. It will undoubtedly also very materially stimulate the cultivation of sugar and rice in a district where at present the facilities for transportation are so meager that there is no inducement for the natives to cultivate these staples extensively. At Manila, of course, the shipping facilities are ample, and coolies are abundant and can be hired very cheaply.

The freight rates for sugar to the United States last year ranged from \$5.50 to \$6.00 per ton, and are at present from \$6.50 to \$7.50, owing, probably, to a temporary scarcity of ships here. There has been a steady decline in rates since 1873, when they ranged from \$11 to \$22.50. The rate to Great Britain for sailers is from \$5 to \$6.50 per ton.

RICE.

Rice is not an article of export here at present, as there has not been enough raised for home consumption. Large quantities are imported from Saigon, and, although this grain is the natives' staff of life, the importance of raising enough to supply the home demand has never apparently been felt. One million three hundred thousand piculs were raised here last year, and nearly a million piculs were imported. The most potent reason probably for this state of affairs is the fact that it requires more labor and care to raise and harvest a crop of rice than are necessary for any other food product. The enervating climate and the absence of the absolute necessity of work by the natives, who can easily gather their provisions from the woods and streams without cost, breeds a spirit of laziness and listlessness decidedly inimical to labor. If the native could put in his rice crop in May and gather it in September, without being obliged to give it much attention in the meantime, there would undoubtedly be plenty of this nutritious grain exported from these islands, but he finds sugar and hemp produced with so much less trouble and more profit that he gives them almost his exclusive attention when he works. Still, the average annual production is nearly a million and a half piculs, and almost a million piculs are imported.

The method of cultivation is practically the same throughout the East. A square sink of about an acre is excavated about a foot below the surrounding surface, a large unfenced space being divided into a number of squares, the dividing lines forming well-shaped square walls of mud and turf about 2 feet wide on the top and from 1 foot to 18 inches high. Paths are formed on these walls, which the natives traverse in going to and from their homes. Along the sides of these paths the grass grows luxuriantly, and in it the deadly paddy snake lies in wait to nip the native heel. ~~After the rainy season has~~

allowed to fill with water. As soon as the earth has settled a rude implement like a harrow, made entirely of wood, is drawn to and fro, mixing the earth and water until it is very soft mud. In the meantime the seed rice has been planted in another field similarly prepared, and has been allowed to grow to the height of about 6 inches. After the tops have been cut off and the blades have again grown about 2 inches more, they are taken up and transplanted in the field first described. The transplanting is done in the latter part of July and the grain is harvested in December. It is placed on the market in two forms—as clean rice of various grades, and as “paddy,” or unhulled rice, which is fed to horses, cattle, and fowls.

A family of four persons will consume about 200 pounds of rice per month. It is used in almost every dish cooked by the natives and takes the place of bread. It is estimated that its production costs about 62 cents per cavan of 125 pounds. The price at which it sells here ranges from \$1.50 to \$2.50 per cavan, it being much cheaper during the harvest time than in March and April. — MANILA, PHILIPPINE ISLANDS, *May 15, 1888.*

ALEX. R. WEBB.

Consul.

SUGAR IN NEW ZEALAND.

Rice is not one of the productions of this colony, and while sugar is not grown here it is, nevertheless, imported in a raw state and refined, and its manufacture is regarded as one of the industries of the colony. It might be well to state that the cultivation of the beet with the view of the manufacture of beet sugar is in contemplation, and it is confidently believed that the business will be commenced and carried on successfully in a short time. Tests have been made and it is found that the soil and climate are peculiarly well adapted for growing the sugar-beet.

IMPORTS OF RAW MATERIAL.

Raw material for sugar-making is imported from the Fiji Islands and Java, while the refined article is imported principally from the Australasian colonies, Great Britain, the United States of America, Mauritius, and the South Sea Islands. The raw material for the last year imported and used for making sugar was from the following countries, with the quantity and value as here given :

	Cwt.	Value.
Fiji Islands.....	21,980	\$91,763.90
Java.....	49,300	173,792.00

REFINED SUGAR IMPORTED.

The refined sugar last year was imported from the following countries, with the quantity and value as shown in the table :

Table showing from what countries and the quantity and value of refined sugar imported into New Zealand during 1886.

From what country.	Quantity.	Value.
	<i>Cwt.</i>	
United Kingdom.....	7,547	\$40,256.60
Queensland.....	36,110	165,192.60
New South Wales.....	49,079	214,511.50
Victoria.....	28,130	151,162.00
Western Australia.....	16	90.00
Tasmania.....	187	779.64
Fiji.....	16,328	79,463.00
Hong-Kong.....	20,151	103,403.00
Mauritius.....	117,176	576,043.00
United States of America.....	10,146	57,002.52
China.....	3,542	15,479.63
Germany.....	400	1,500.00
South Sea Islands.....	12	87.00
Total.....	383,824	1,403,970.49

The quantity and value of refined sugar imported may be taken as a fair annual average. Glucose, molasses, and treacle are likewise imported into the colony. The quantity and value of glucose imported in 1887 was 4,596 hundred-weight, of the value of \$6,754.45. Of the glucose imported there came from the United States of America 2,155 hundred-weight, of the value of \$6,149.20.

SUGAR IN NEW ZEALAND.

The materials for making sugar are not grown in New Zealand, but are imported, and sugar is made and refined here. A large quantity is used in beer. There were about 9,000 tons refined here during the year 1887. The sugar-works on the Waitemata Bay, near this place, turn out a large quantity of fine sugar, supplying the trade in the colony and exporting a small quantity to the islands of the Pacific.

As before stated, the quantity refined in the year 1887 from the raw materials imported was about 9,000 tons. Import of raw sugar, 198,340 hundred-weight; refined sugar, 279,920; glucose, 6,634; molasses-treacle, 3,741. The export is so trifling in quantity that it is hardly worth stating.

THE PRICE OF SUGAR.

There are three grades of sugar in use here. These grades are classified and designated by the numbers 1, 2, and 3. The table of weights and measures in use here is the English, and is, therefore, different from that of America, 1 ton being 2,240 pounds. The following are the wholesale prices prevailing here :

No. 1, per ton.....	\$131.39
No. 2, per ton.....	

The retail prices are as follows :

	Cents.
No. 1, per pound.....	7
No. 2, per pound.....	6
No. 3, per pound.....	5

The Government statistics estimate the consumption per family, of white population only, at 482 pounds, or about 92 pounds per head of population; but as these figures are disturbed by the quantity used for beer, which would make a reduction of say $12\frac{1}{2}$ pounds per head, and of the consumption by the Maori population (original inhabitants of New Zealand), which is considerable, the figures, it will be seen, are less reliable than might be desired. A gentleman, whose family consists of six persons, gives the estimate for such a family at 33 pounds per month, or 396 pounds per year. Another estimate is given of a family of four persons (two being children) wherein the quantity consumed is 20 pounds per month, or 240 pounds per year. These estimates may be taken as fair averages of the consumption by families throughout the colony.

A new sweetening substance called saccharine has been introduced into New Zealand, but I believe it has not gone into use to any extent as yet. It is made from coal-tar, and is said to be three hundred times sweeter than sugar. It is a white crystalline powder very much like fine granulated sugar, and it is claimed to possess three hundred times the sweetening power of cane sugar. It is a simple sweetening condiment, giving to the taste the sensation of sweetness, and is healthy in its uses. It undoubtedly will be extensively used in pharmacy, fruit-preserving, jam-making, and in brewing. I have no doubt it is well known, but having but recently been introduced into New Zealand, I call attention to it as a substance well calculated to materially affect the production and consumption of sugar should it possess the qualities claimed for it. — AUCKLAND, *May 18, 1888.*

JNO. TYLER CAMPBELL,
Consul.

METHOD OF DETECTING ADULTERATIONS IN OLIVE OIL.

Southern France has of late years suffered seriously from the adulteration, or rather the artificial fabrication, of her two principal agricultural products, wine and olive oil. During the recent season of scanty vintages there has grown up in this district an immense manufacture of "piquettes," or raisin wines, which are made by soaking in water until fermentation takes place, the cheap dried grapes which are imported in vast quantities from the Grecian Archipelago and Turkey. These substitutes have so far replaced the real but more costly French wines that now—since the replanted vineyards begin to yield more abundantly—the genuine ordinary wines command only prices

With olive oil the case is similar, but even worse. Only a small portion of France is adapted to olive culture, the entire available district being a strip of dry country less than 200 miles wide along the Mediterranean coast. The tree is of slow growth and is, moreover, beset by numerous insects and diseases, which, in addition to unfavorable phases of weather, render the yearly olive crop more or less uncertain. Any serious reduction in the annual consumption of olive oil is sufficient to reduce its market value below the point of profitable culture. This has been done by the now nearly universal practice of adulterating or diluting the olive oils of Nice and Provence with various seed oils, viz: Sesame, peanut, poppy-seed, cameline, and especially cotton-seed, which last, by reason of its cheapness, palatable flavor, and difficulty of detection, has of recent years nearly supplanted all the others as an adulterating material.

The rank, low-priced olive oils from southern Italy (Bari), Algeria, and Tunis have been brought here in vast quantities, diluted with cotton or sesame, and been consumed and exported wholesale in place of the fine, delicate, high-grade oils of the Var and Bouches du Rhone, which have thus been nearly elbowed out of the market. This has so reduced the value of olive oil in southern France that the government has set itself seriously to the task of providing a remedy. The first step was to discover some method of detecting such adulterations which should be not only exact in its results, but sufficiently simple to be practicable for farmers, dealers, and ordinary consumers. It was stated in a report which was made from this Consulate in February, 1888, that no such process was then known. As late as the 17th of May last a meeting of the Scientific and Industrial Society of Marseilles was addressed by Mr. Ernest Millian, an accomplished analytical chemist, who reviewed elaborately all of the known processes, and admitted that none of them were sufficiently delicate and exact to detect an adulteration of less than 10 per cent. The "Cailletet" process, which consists in treating the oil with a mixture of sulphuric and nitric acids, has been hitherto generally employed, but this was declared by Mr. Millian untrustworthy unless the degree of adulteration exceeded 20 per cent.

The "Bechi" process, now used by the Italian Government, will detect an admixture of 15 per cent. of cotton-seed oil, provided the sample analyzed contains no glycerine, formic acid, or free fatty acids, any one of which, even in minute quantity, is sufficient to mask the chemical reaction upon which the process of Signor Bechi depends.

Mr. Millian then described a new method, invented by himself, which consists in treating with heat the saponified products of the oil in alcoholic solution with nitrate of silver. This, however, is a process for the laboratory of the accomplished chemist, and is not adapted to general use. The same is true of the "Levallois" process, which has been used by experts in cases of real importance with more or less questionable results, the analysis in one notable instance having given the same result from a sample of pure olive

Finally, as it would seem, the long-sought-for process has been discovered by Mr. Brullé, chemist of the Agronomic Station at Nice. His discovery was announced to the Academy of Sciences in April last and has been since subjected to an elaborate series of tests and experiments by a commission specially appointed for the purpose by the Agricultural Society of the Alpes-Maritimes.

Mr. Brullé began upon the known principle that vegetable oils, when oxydized by the application of certain acids, assume different shades of color. He then hit upon the use of albumen to fix and accentuate these delicate graduations of tint. The report of the commission has recently been published and gives the process of Mr. Brullé such complete and unqualified endorsement, both for its simplicity and the exactness of its results, that the subject assumes a practical importance not only to the countries which produce olive oils but to those which, like our own, import them as costly luxuries for general consumption.

In its series of experiments at Nice the commission first applied the process of Mr. Brullé to six classes of samples, viz, first, to pure olive oil, then to the same oil with an added admixture of 5, 10, 20, and 50 per cent., respectively, of cotton-seed oil, and, finally, to the pure cotton-seed oil itself. When the result had been established by repeated experiments with each grade of samples, a fac simile of the tint produced by each successive degree of adulteration was prepared by dissolving certain aquarelle pigments in stated quantities of water. Thus the process and a standard system of proofs was put within reach of any person having a good eye for color and a slight familiarity with chemical manipulations.

THE NEW PROCESS.

The process of Mr. Brullé is as follows: Put into a test-tube $1\frac{1}{2}$ grains of pure albumen (this should be gently heated in the flame of an alcohol lamp to expel any remaining moisture in the albumen which might otherwise modify the exactness of the result), then add 3 cubic centimeters of nitric acid and 10 cubic centimeters of the oil to be tested (the quantity of each ingredient used is, of course, immaterial, provided the above-relative proportions are maintained; a test-tube graduated metrically is the most convenient for the purpose), the mouth of the tube is then closed with a cork to prevent the boiling over of the liquid during ebullition, but pierced with a small orifice to permit the escape of vapor which would otherwise explode the tube. The materials are mixed by shaking, but the nitric acid quickly settles to the bottom. Now warm gently in the lamp the part of the tube containing the oil, then apply the flame to the underlying stratum of acid. A fierce ebullition soon ensues, and when this is at its height plunge the tube into ice water sufficiently cold to chill the contents to 4° centigrade, the tube into ice water sufficiently cold to chill the contents to 4° centigrade, During the cooling process there is de-

yellow to

The findings of the commission at Nice are tabulated in its official report, as follows: The standard tint in each grade being produced by dissolving the stated number of units of each pigment named in 100 units of water. For this purpose ordinary dry cake water-colors are most convenient.

1. Pure olive oil yields a precipitate tinged like 5 units of Naples yellow dissolved in 100 units of water.
2. Olive oil containing 5 per cent. of cotton oil yields the tint of 5 units Naples yellow and 5 units of dark chrome yellow in 100 units of water.
3. Olive oil containing 10 per cent. cotton-seed yields a tint equal to 20 units Naples yellow, $6\frac{1}{2}$ units chrome yellow, and 1 unit Chinese vermilion, in 100 units of water.
4. Olive oil containing 20 per cent. cotton-seed yields a tint equal to $6\frac{1}{2}$ units Naples yellow, 6 units chrome yellow, and $1\frac{1}{2}$ units Chinese vermilion, similarly dissolved.
5. Olive oil with 50 per cent. cotton oil yields a tint equal to 5 units Naples yellow, 5 units chrome yellow, and 5 units of vermilion.
6. Pure cotton oil yields a precipitate having the color of $3\frac{1}{2}$ units chrome yellow, 10 units of vermilion, 1 unit of burnt sienna, and 1 of natural sepia, in 100 units of water.

Other seed oils, including sesame, cameline, peanut, and poppy seed, give a precisely similar series of tints in proportion to the degree of their admixture with olive oil, except that the colors are more inclined to the reddish shade, which would be produced by covering the corresponding cotton-seed tint with a thin wash of carmine.

These gradations of color are most marked when the liquid in the tube is at about the stated temperature, 40° F. As the precipitate is further chilled to the freezing point, the colors fade and lose their individuality.

Such is the system which it is now expected will enable purchasers and consumers of olive oil in this country to detect the adulterations, which have become so general that very few brands or firm names are any longer a guaranty of purity. When it is remembered that more than 2,000,000 gallons of cotton-seed oil are exported from the United States to Marseilles in a single year, and that more than half of this vast quantity is used for adulterating olive oils, a large part of which are re-imported to the United States through a 30 per cent. duty, the importance of some new and better means of controlling the integrity of this trade will be apparent.

Two weeks ago 1,000 tierces of American lard were stopped at the wharf in Marseilles and the consignees subjected to a costly process, which is not yet terminated, because the lard was found upon analysis by the customs officers to contain 10 per cent. of cotton-seed oil.

This seizure was based upon the fact that, while lard is entitled to entry duty free, cotton-seed oil bears a duty of 6 francs per 100 kilograms, and this adulteration of a free article with a dutiable one is held to be fraudulent. The least that can happen to the shippers in this case will be that they must pay the duty on 100 tierces of cotton-seed oil and the expenses of the process, besides the loss which the consignee suffers from the delay. Might not this rigid scrutiny be equally well applied to some of the adulterated and falsified foreign products which are landed at Marseilles?

It is not within the scope of this report to consider whether either lard or olive oil, when adulterated with cotton-seed, is necessarily unwholesome. The vital fact is that in paying from 40 to 50 cents per kilogram and 30 per cent. duty on American cotton-seed as olive oil, the people of the United States are submitting to a wholesale fraud, the proportions of which are increasing year by year.

The interests of both the United States and France will be subserved when this reckless tampering with the integrity of commerce is systematically suppressed. As long as our people will accept and pay for adulterated oils they will continue to flood and dominate the market. The remedy must be applied at our ports of entry.—MARSEILLES, *July 31, 1888.*

FRANK H. MASON,

Consul.

MANUFACTURE OF WINE FROM CURRANTS.

Favorable weather during the winter and spring has proved very beneficial to the currant vines. The fruit is now well developed and appears very abundant, and unless something untoward occurs, such as rot or damage from rain between this and the housing of the fruit, the yield will be the largest ever produced.

Last season's crop has proved to have been over 127,000 tons, or just about the same as the crop of 1886. During the spring, and even after a good portion of the crop had been shipped off, it was supposed that there would have been a falling off of 10,000 to 15,000 tons, in consequence of the old vines having produced poorly, but this, it has been proved, was more than made up by young vines coming into bearing. As all the vines, however, this year have a large show, and the usual proportion of new plantations will come into bearing, I do not think I shall be far wrong in predicting that this season's crop will reach 150,000 tons, barring, as before said, unforeseen circumstances.

The gathering of the fruit in early situations will commence about the 25th of next month, but it will be the end of August, even if the weather be favorable, before the whole crop can be secured.

CURRANTS FOR WINE.

Had it not been for the new outlet which presented itself some years ago for the consumption of currants in France for wine-making purposes, crops similar to the one which we are likely to have this year could never have been consumed at prices in any way remunerative to currant growers. The introduction of currants into France for wine-making dates from the year 1887, when, owing to a large crop and very indifferent quality, the article had depre-

of consumption that it could be

excepting that distilled from wine. Prices, however, in succeeding seasons again attained their normal level, and distillers were no longer able to use currants at a profit, but meanwhile wine-makers had been experimenting with the article, and it was found that it produced likewise, by simple admixture with water and subsequent fermentation, a liquid which had all the attributes of wine, and which, owing to the destruction caused to the French wine-growing districts by the *phylloxera*, would act as an admirable substitute for the cheap wines required for consumption by the laboring classes, now no longer to be obtained by them on account of the scarcity and dearness of all French wines. Since 1878 and 1879, therefore, this new industry has made rapid strides in all parts of France; the importation has gradually increased to 40,000 or 50,000 tons of currants, besides some 60,000 tons of Turkish and Spanish raisins, which are annually imported for a similar purpose, and much capital has been invested in building large manufactories and acquiring the necessary material for the production of this wine, so that nothing but prohibitive import duties is likely to interfere with the gradual increase of trade in the article between the two countries. What advantage has accrued to Greece from this newly-established trade can be judged from the fact that, ever since the exportation of currants to France has assumed important dimensions, the price of currants has gradually increased by about 50 per cent., or, say, from an average price of about francs 30 cif. per 100 kilograms, at which currants were exported in the years 1879-'81, to francs 45 cif., which has been the average of the last two or three years, and still, as before stated, the importation continues to increase annually.

The process of wine making from dried currants is exceedingly simple. The fruit is emptied out of the barrels or sacks in which it arrives into large wooden tubs, of a capacity of several tons, and twice or thrice (according to the quality and strength of wine which it is intended to produce) the amount of water is added. During cold weather it is necessary to artificially heat the water to an average summer temperature, otherwise the fermentation would be too long delayed, but under ordinary circumstances the fermentation has taken place and the liquid is ready to be strained in a period of from eight to ten days. When this last operation has taken place the liquid is ready for immediate use, and can in no way be distinguished from ordinary light white wines; it is of a light ruby color and possesses a strength, according to the amount of water that has been added, of from 9 to 13 degrees. Wholesale dealers usually sell it at so much per degree of alcoholic strength. It is also employed for the manufacture of superior brands of wine, and this is done by the admixture of strong and colored Spanish, Italian, and Dalmatian wines, and by various other processes well known in France. This should not, however, cause any prejudice against similar wines, for they contain nothing deleterious or in any way injurious to the consumer, for the currant in its original state is simply a small stoneless grape, which produces an excellent, strong, fruity-flavored wine; the French therefore in adding

by the action of the sun in the process of drying. Considering how much spurious wine is put on the market nowadays, I think one has reason to congratulate himself if he can be perfectly certain he is drinking nothing worse than the liquid produced by the admixture of currants with water. Currants are likewise consumed to a great extent during the vintage by farmers and proprietors of vineyards in France, who produce ordinary qualities of wine and who, owing to the remunerative prices paid for their wines, are anxious to increase their product as much as possible. Experience has shown them that if currants, with the usual proportion of water, are mixed during the vintage with the fresh grapes and allowed to ferment together, the blending is much superior to that obtained by mixing a currant wine to a natural wine, and the liquid obtained has all and every attribute of pure, natural wine. The most careful chemical analyses have declared this, and it is, therefore, not to be wondered at if many wine-growers in France avail themselves of this to make up, in a small way, for the enormous deficit caused by the ravages of the *phylloxera*, which, if I am not mistaken, has reduced the total French wine production from an average of about 60,000,000 hectoliters of wine to about 30,000,000 annually. I may add that the 40,000 to 50,000 tons of currants annually imported into France, when turned into wine, represent only 1,500,000 hectoliters, so there is plenty of room for the further development of this trade.

To a smaller extent currants are employed in France, Germany, and Switzerland by the poorer classes, who make an alcoholic beverage for themselves by mixing them in a jar with water and allowing them to ferment.—
PATRAS, June 30, 1888.

E. HANCOCK,
Consul.

TOBACCO IMPORTS INTO EGYPT.

Referring to my No. 226, of June 12th, I have to report that the Egyptian Government now decrees that imported tobacco must be accompanied with duly authenticated declaration that it has been produced in the country from which it is exported into Egypt. In default of such declaration a tax of about 10 cents per pound will be imposed. The object of this tax is to protect Turkish tobacco, which the Greeks have been compounding with the products of their own and other countries and sending such compounds into Egypt. The same thing is reported from Malta. Greeks, and probably Maltese, will, I am satisfied, present all the false certificates required, and it remains to be seen how the Egyptian Government will make this decree virtually good. I have just received a letter from a Greek merchant in Anvers, who having been informed that an effort is being made to introduce American tobacco, has not imported direct, but that

American consignors. Greek treachery is an inherent quality which has grown in greater ratio in the ascending scale than has national power and influence descended. If Americans send tobaccos to Egypt they will pursue the safest course in making direct shipments and in letting intermediaries strictly alone.

In my report, sent with No. 226, I calculated that the Egyptian demand for foreign tobaccos to satisfy the lack of home production would begin in September. On this point I have changed my views. Further investigation satisfies me that this demand will not begin before the end of the present calendar year.—CAIRO, EGYPT, *July 12, 1888.*

JOHN CARDWELL,
U. S. Agent and Consul-General.

SWISS EXPORTS TO THE UNITED STATES.

The following table shows the value of declared exports from the consular district of Horgen to the United States during the fiscal year ending June 30, 1888:

Articles.	Third quarter, 1887.	Fourth quarter, 1887.	First quarter, 1888.	Second quarter, 1888.	Total.
Articles of art (wood carvings, musical boxes, pictures, etc.)	\$509.30	\$115.80	.....	.....	\$625.10
Bolting-cloth.....	7,732.54	10,897.92	\$6,409.55	\$11,468.26	36,508.27
Books	96.50	.....	.....	.....	96.50
Catholic devotional articles.....	37,600.64	29,616.16	34,051.29	21,868.81	123,136.90
Cheese	2,881.46	1,687.82	870.25	1,002.66	6,442.19
Clocks.....	692.87	28.95	.....	.....	721.82
Cotton in pieces.....	.....	560.78	179.71	.....	740.49
Cotton thread.....	.....	.....	.....	123.41	123.41
Drugs.....	.....	.....	.....	353.69	353.69
Electros .....	.....	181.55	.....	.....	181.55
Honey.....	.....	143.76	.....	155.94	299.70
Iron goods.....	38.60	229.59	115.41	.....	383.60
Machinery for weaving, knitting, etc.....	.....	2,652.28	459.98	1,666.46	4,778.72
Mineral water.....	.....	157.48	.....	.....	157.48
Porcelain and stoneware.....	39.37	.....	.....	.....	39.37
Raw silk .....	.....	987.09	.....	.....	987.09
Silks in pieces.....	228,877.02	202,847.66	265,262.67	89,998.12	786,985.47
Silk and cotton goods in pieces.....	182,937.68	142,473.00	262,215.45	245,183.77	832,809.90
Silver-plate (old), U. S. manufacture.....	600.00	.....	.....	.....	600.00
Straw goods	252.88	8,062.13	10,175.41	967.16	19,457.58
Sugar of milk.....	582.86	555.45	2,068.20	785.10	3,991.61
Velvets.....	6,600.86	5,476.73	1,002.98	6,829.43	19,910.00
Weaving utensils.....	520.40	616.54	.....	182.21	1,319.15
Wines and liquors.....	742.53	372.45	723.48	484.56	2,323.02
Total for year ending June 30, 1888...	470,705.51	407,663.14	583,534.38	381,069.58	1,842,972.61
Total for year ending June 30, 1887...	.....	.....	.....	.....	1,765,069.64
Total for year ending June 30, 1886...	.....	.....	.....	.....	2,066,336.78

HORGEN, *July 1, 1888.*

WILLIAM T. RICE

RATES OF EXCHANGE IN BRAZIL.

A branch of the London and Brazilian Bank, Limited, in this city, is the only house which gives regular public rates of foreign exchange. For specie there is generally a limited demand, but the foreign coin which commands the slightly higher price is the British sovereign, because it is better known among the people. As a matter of fact, practically speaking, there is no gold in circulation, and but little silver, paper and copper being the currency of the country.

All quotations are made for gold in London, and paper being at a discount of 12 per cent. as compared with Brazilian gold, the quotations are understood to mean the number of pence in gold given in London for millreis in paper received here. A millreis gold is worth 27 pence, or 54 cents United States gold, but as there is no gold in circulation all bills are purchased with paper. When the quotation in London is $23\frac{1}{2}$ pence to a millreis, by parity of rates it is 405 reis to the franc (19.3 cents) on Paris, 504 reis to the mark (23.8 cents) on Hamburg, 230 per cent. on Lisbon, and 2,200 reis to the dollar (96.5 cents) on Montevideo.

To explain the rate of 230 per cent. on Portugal, the millreis (monetary unit of Brazil), like the Portuguese millreis, contains, as the word indicates in the language, 1,000 reis, but of the gold value of 54 cents, while the Portuguese millreis has twice the purchasing power and weight and is worth \$1.08 gold; therefore, when a bill is desired here upon Portugal it takes twice the number of Brazilian millreis to purchase a given number of millreis in Portugal, and as Brazilian paper is always at a discount, the difference in value between it and gold is added to the rate. When there is an increase or decrease on London the rate increases or decreases for all other points in the same ratio.

The following is the highest and lowest rate of exchange on London, in pence, for the first six months of 1888:

	Highest.	Lowest.
January	$23\frac{7}{8}$	$23\frac{1}{2}$
February	25	$24\frac{3}{4}$
March	$24\frac{7}{8}$	$22\frac{1}{2}$
April	$24\frac{5}{8}$	23
May	$25\frac{7}{8}$	$23\frac{1}{2}$
June.....	$24\frac{7}{8}$	24

The estimated amount of foreign bills passed in Rio Grande do Sul in the first six months of 1888 is as follows: January, \$1,040,600; February, \$774,400; March, \$798,600; April, \$629,200; May, \$193,600; June, \$677,600.—RIO GRANDE DO SUL, July 18, 1888.

ADULTERATED LARD IN ENGLAND.

It was a necessary consequence of the late proceedings in Congress and before the Committee on Agriculture with reference to the manufacture of lard and of "refined" lard that attention would be drawn in this country to the question, and it was a reasonable expectation that proceedings would be taken by the authorities under the "Food and Drugs Act" against venders of the adulterated article, for thus is it plainly designated in England, and the euphonism "refined"—whose meaning is as well understood by the trade here as in the States—is not employed.

The Department is already, in all probability, informed of the action taken by the health committee of the Town Council of Liverpool on the 20th of June last, when several wholesale importers of American lard were fined for selling "lard not of the nature, substance, and quality demanded by the purchaser." The prosecution was based upon an analysis of American lard made by the public analyst, who found therein cotton-seed oil and stearine—either beef or mutton fat. The analyst was stated to have discovered, after eighteen months' investigation, a method of detecting these foreign matters in the lard. It is, however, reasonable to assume that he gathered from the evidence before the House Committee on Agriculture the knowledge that nitrate of silver unerringly indicated the presence of cotton-seed oil. The accuracy of his analysis was questioned by no one of the defendants, one of whom asked and obtained leave to appeal. This appeal case has not yet, I believe, been heard.

It was almost certain that the action of the Liverpool authorities would be followed by suits and summonses in other places, and I have now to report that on the 24th of July eight retail dealers were summoned in Bristol for "selling a pound of something which was not the article demanded, namely, lard." The police proved the purchase of the lard at the respective stores of the eight defendants, and that they had in each case complied with the requirements of the act by informing the grocer of the object they had in view in purchasing, and by leaving with him a portion of the quantity bought. The public analyst testified to the presence in each sample analyzed of considerable quantities of cotton-seed oil and foreign fat, one sample containing 50 per cent. of the latter. Three American houses were involved. The magistrates in giving their decision said that it was the first time the matter had been brought before the court, and they thought the objects in view would be gained by the publicity given to the proceedings. Hence they would not convict, and would consent to the information being withdrawn on the defendants paying costs.

The facts in relation to these Liverpool and Bristol cases were widely disseminated by the press, and not a few solid editorials congratulated the

smartness or roguery of our American cousins." What the immediate effect upon the trade has been, it is too soon to say. The agents of the "refined" or compound lard wrote one customer (and the presumption is that all received similar communications) after the Liverpool trial offering an allowance upon unsold stocks, requesting him "to do the best he could with what remained in hand," and inclosing labels to be affixed, of which labels one is forwarded herewith:



Whether the employment of the words "This product is a mixture" would constitute a good defense is, I believe, an open question.

The ultimate effect of these trials and the publicity given their results upon our trade in this country in lard, I may with a certain amount of confidence predict, will be as follows:

The 50,000 or so tierces of "compound" lard annually imported into this country (England and Scotland) will cease to come here, and there will be a corresponding, or nearly a corresponding, increase in the import of natural lard. It is important to note that while last year 600,000 tierces of compounds were exported from the United States as against 400,000 tierces of packers' lard, yet that England and Scotland took 200,000 tierces of the latter and only 50,000 of the former. In other words, Great Britain takes 25 per cent. of the lard export of the United States, but instead of three-fifths of the British import consisting of compound lard and two-fifths natural, only one-fifth is compound, while the other four-fifths is pure. A controlling reason for this is to be found in the operation of the Food and Drugs Act, which has discriminated and will discriminate between the pure lard on account of its origin, but only such portion as it finds, upon investigation, to deserve condemnation. It is possible that there may, for a limited

arrowed demand for American lard, but in the end our export
 { Great Britain is con-

A SCANTY WHEAT CROP IN FRANCE.

The phenomenally cold, wet weather which has prevailed generally throughout Great Britain and the whole of western Europe since May has so affected the quantity and quality of the wheat crop in France as to cause during the past week an extraordinary rise in breadstuffs in the markets of this country. In Marseilles, for example, American red winter wheat rose from 19.50 to 21.50 francs per cental during three days, and flour is now held at a higher price than has been touched here for many months past. In the Mediterranean region the wheat is of fair quality, and has been generally harvested in good condition, but north of the latitude of Avignon the cold, cloudy weather and persistent rains have not only retarded the ripening of the crop, but have so complicated the harvesting that much of what has been gathered has suffered more or less injury. During the past two days the return of fine weather has checked momentarily the somewhat panicky feeling of the previous week, but the season is now so far advanced that the long-delayed sunshine can not do more than slightly improve the *quality* of the crop by facilitating the work of harvesting.

The essential fact in the situation is that the *quantity* of the French wheat crop of this year can not exceed 90,000,000 hectoliters, which will leave a deficit of 28,000,000 hectoliters, or about 79,520,000 bushels, to be supplied by importation.

It is not improbable that the total importations may exceed even that high figure, for the reason that the home crop of last year was a short one, and as the high duty on foreign wheat checked importations the stocks on hand throughout the country are quite below their normal proportions.

The law of March 25, 1887, advancing the import duty on wheat from 3 to 5 francs per cental, contains a provision that in case of any extraordinary crisis the President of the Republic may, by proclamation, reduce or abate entirely during a stated period the duties thereby imposed. In the face of the large importations which will necessarily be made during the coming year a rumor is already current that the cabinet would advise that this step be taken. It is not apparent that this report has any tangible foundation, and it is extremely improbable that the French Government, in the presence of the distressed condition of agriculture, will abolish a duty which, besides yielding a large revenue, will add 25 per cent. to the market value of native wheat. But whether this be done or not the wheat importation of the coming year will be necessarily heavy, and the United States will have an opportunity to furnish a full share of it. Austrian harvests have suffered like the rest from untoward weather. Russia has a large and excellent crop, but merchants in Black Sea ports fully appreciate their advantages, and are, for the present at least, stubbornly holding the new crop for higher prices than are as yet offered.—MARSEILLES, *August 9, 1888.*

RAILROADS AND STEAM-SHIPS OF SOUTHERN BRAZIL.

In this province, Sao Pedro do Rio Grande do Sul, there are at present three railways in operation, and one or two other lines projected, for which preliminary surveys have been made.

The lines in operation are, first, Estrada de Ferro do Rio Grande a Bagé, opened for traffic on December 2, 1884; second, Estrada de Ferro de Porto Alegre a Uruguayana, opened in March, 1883, and third, Estrada de Ferro de Porto Alegre a Nova Hamburgo, opened in 1875.

The first line runs from the city of Rio Grande do Sul, in the southern part of the province, along the low, sandy shores of Lagoa dos Patos to Pelotas, a city of over 10,000 inhabitants, distant 52.5 kilometers; from thence almost due west to Bagé, the present terminus, a total distance from Rio Grande do Sul of 280.2 kilometers, or 174 English miles, and within 80 miles of the boundary line between the Republic of Uruguay and the Empire of Brazil.

This road is substantially built; has a gauge of 1 meter, or 1.09 yards, and is laid with heavy T rails, of English manufacture, on hard-wood sleepers, secured with spikes, and ends joined with fish-plates and bolts. It was built, and is at present owned and operated, by an English company. The locomotives are from the famous Baldwin Locomotive Works in the United States, of the "Mogul" pattern, burning Cardiff coal and patent fuel, which is simply very fine coal mixed with some resinous substance and pressed into hard blocks. Passenger coaches are of two classes—those for the first-class passengers were made in the United States and on the American plan, and those for second-class passengers were made in Europe, but on the same plan as the first-class coaches. The traffic, or freight cars, are of Brazilian make, being light and short, mounted on a single truck at each end. It is expected to extend this road to the Brazilian boundary line.

The latest published official returns showing the receipts and expenses of the road are, for the year 1936, in which year its receipts were, reduced to United States currency, \$329,645, and expenses, including improvements, \$306,364, leaving an unexpended balance of \$23,281. In that year it carried 105,465 passengers of all classes, and 20,735 tons of freight. First-class passenger rates from Rio Grande to Bagé are \$10; round-trip, \$15. Freight is divided into five classes under the tariff list of the company. For first-class freight the charge is \$28 per ton from Rio Grande to Bagé, and for fifth class \$6.70 per ton. The road was built at an average cost of \$37,000 per mile, under a guaranty by the Brazilian Government of 7 per

If the operating expenses should exceed the receipts, the 7 per cent. guaranty by the Government is first applied to the payment of that deficit, and if not sufficient to discharge it the Government's responsibility extends no farther. A number of subscribers to the capital stock were under the impression that the guaranty of 7 per cent. per annum by the Brazilian Government was unconditional, but they have since learned different, for last year a dividend of 5 per cent. only was declared, which is practically a deficit of 2 per cent. on the gross receipts of the road.

The second road, when completed, will run from Porto Alegre, the capital of the province, in the central eastern part to Uruguayana, on the Uruguay River, a distance of 378 miles. However, it is not completed over two-thirds of the way, the work of track-laying progressing slowly. This is the central road of the province, dividing it east and west into two nearly equal parts, and when completed will connect the capital, a city of 40,000 inhabitants, with the Argentine Confederation at Uruguayana, where the Brazilian Government has a custom-house. It is owned and operated by the Government and is 1 meter in gauge. I know nothing of the engines and cars.

The receipts for the fiscal year 1886 of this road were \$219,063; expenses, \$254,310, leaving a deficit of \$35,247; number of passengers, 40,515; freight, 34,701 tons.

The third and last line in operation is a short one, 26 miles in length, connecting the capital with New Hamburg, a large German settlement. It is owned by an English company, and in 1886 had a deficit of \$1,878, but I am informed that under its recent management it will pay a small dividend this year.

Some time since a survey was made by the Government for a road from Porto Alegre to the port of San Francisco, in the province of Santa Catharina, the object of which was to give an outlet to the sea for the northern and western part of the province without passing through Lago dos Patos over the Rio Grande bar. This survey has been retracted by the Government, as the road it now operates does not pay expenses.

The sum of \$100,000 has been subscribed by citizens of this city and Pelotas for the building of a steam tramway running from the suburbs of this city to the sea-shore, a distance of 11 miles, where extensive grounds will be arranged for a pleasure resort. This road will be built, the name of the company being Companhia de Binds Suburbanos de Mangueira.

STEAM-SHIP LINES.

The steamers of six different companies call at Rio Grande do Sul. The Companhia Nacional de Navegucao a Vapor has six steamers, is subsidized by the Brazilian Government for mail service, and runs its steamers regularly from Rio de Janeiro to Porto Alegre; the Liverpool, Brazil, and River Prata steamers (Lamport and Holt's line) three in number.

they go to Porto Alegre, where they receive freight for that point. This company will soon put on another steamer; the Companhia Navegucao Estrada de Ferro; Espirito Santo e Carevellas, has two steamers running as the other lines mentioned; the Companhia Paulista one steamer; the Companhia Norte e Sul two steamers, and the Companhia Navegucao Costeira has one steamer, which carries cargoes only. The time employed by these steamers to reach Rio de Janeiro is from four to five days, a distance of 720 miles, including calls on the way.

The steamers of the last two named companies sometimes go as high as Pernambuco, consequently their arrivals and departures are irregular. The largest of these steamers has a registered tonnage of 600, but can take almost, if not quite, 1,000 tons; the smallest, 320 tons register.

These steamers were all built especially for this trade, of light draught, in order to cross safely and at all times the Rio Grande bar. Postal communication mails for the interior are regularly dispatched to Bagé daily by train, and all steamers, except those belonging to the Government, coming to or leaving this port, carry mail. — RIO GRANDE DO SUL, *July 9, 1888.*

LEBBEUS G. BENNINGTON,

Consul.

LANDS FOR IMMIGRANTS INTO GUATEMALA.

The laws of Guatemala amply favor the industries of agriculture and stock raising. Liberal laws have been enacted ordering reduction in private ownerships,* and for the selling at sufficiently low prices of the public lands and those of the municipalities.

In Vera Paz, for example, the caballerias (112 acres each) of public lands for such an object can be purchased at such low prices that they never exceed \$50 per caballeria.† The liberality shown in the above-mentioned concessions has opened up agriculture notably. The rich coffee districts of Costa Cueva, El Palmar, Xolhuitz, etc., were formerly virgin mountains,‡ which produced nothing.

The Government would welcome North America immigrants with pleasure coming to settle in this country to engage in stock raising. The department of Huehuetenango and El Quiché, in the west of the Republic, have extensive lands of their own for this industry.

The immigrants making use of the pre-existing laws and following the easy form of procedure can acquire the public lands which still exist there, of which portions remain, though not in large quantities. — GUATEMALA, *July 12, 1888.*

JAMES R. HOSMER,
Consul-General.

THE CHAMPERICO AND NORTHERN TRANSPORTATION COMPANY OF GUATEMALA.

A concession was granted, on the 12th of March, 1881, by the Government of Guatemala to Messrs. J. H. Lyman, D. P. Fenner, and T. B. Bunting, citizens of the United States, to build a railroad between the port of Champerico, on the Pacific coast of the Republic, to Retalhulen, a point about 28 miles in the interior.

The concession was for the term of ninety-nine years from the date of the opening of the road to public traffic. For a term of twenty-five years from the same date the road was to be free from taxation and maritime duties, and foreign employes to be exempt from taxation and military service. During the same term, also, the road was to be protected by the Government from any railroad competition within a distance of 15 Spanish leagues on either side of the line. The right of way was also conceded and station grounds given by the Government, together with free use of its telegraph during the construction of the road and free use of the mails for twenty-five years for the business purposes of the road. A subsidy of \$700,000, in Guatemalan currency, was given to the enterprise, to be issued in non-interest-bearing bonds, receivable at the custom-house of the Republic in payment of a certain percentage of all duties. A maximum tariff of freight and passenger rates was fixed by the concession, and the road was obliged to carry the mails free, and Government employes on duty at half the regular rates.

The company was incorporated under the laws of California in 1882, and work of construction was commenced in June of that year. The road was formally opened for traffic on the 4th day of July, 1884. Its total cost was about \$750,000 in gold. The capital stock of the company is \$1,000,000, divided into 10,000 shares of \$100 each.

The company mortgaged the road, issuing 500 first-mortgage gold bonds, or a total of \$500,000, bearing interest at the rate of 6 per cent. per annum. Twenty-seven of these bonds have been redeemed, leaving a mortgage debt now outstanding of \$473,000.

An additional subsidy of 1,000 caballerias* of public land was also granted to the enterprise. This land was selected by the company on the Atlantic coast in one body, and lies along the Sarstoon River, which forms the boundary between Guatemala and British Honduras, otherwise called Belize. It lies within a few miles of the port of Livingston, the chief port of entry of Guatemala on the Atlantic coast. The land is suitable for the culture of bananas, and contains some fine mahogany timber.

CHARACTER OF COUNTRY AND PRODUCTS.

The road was built for the purpose of carrying to the seaboard the great coffee crop of the northern part of the Republic, as well as the imports for the same section received at the port of Champerico.

At this port there is an excellent iron pier 1,100 feet in length, the property of a native company. The ships lie outside of this, about a mile from the shore, and cargo is transported to and from the vessels and pier by means of lighters. This work is done by another native company, called the "Agency Company," both enterprises receiving a liberal remuneration from the shippers of merchandise. Along the shore, at points within a few miles of Champerico, a large amount of salt is manufactured by evaporation of the sea-water.

Leaving Champerico the first station on the road is reached about 4 miles inland, called Granada. At this point a mule trail intersects the railroad and salt is shipped to the interior. One mile farther inland is the station of Acapan, where another trail intersects the road, and at which place salt is also received. But the first station of any importance is Caballo Blanco, situated $15\frac{1}{2}$ miles from Champerico. At this point is received about one-half of all the coffee exported from this end of the Republic. From the sea to the place just named the road runs through a low flat country, intersected by numerous streams and covered with a dense jungle, rendering the region around very unhealthy and causing the usual tropical malarial fevers to prevail. Onward from Caballo Blanco a more open country is found, and some timber of large growth. From this point to Retalhulen, a distance of $11\frac{3}{4}$ miles, the country rises more rapidly and is interspersed with "portreiros" or pasture grounds and timber, and from this portion of the road may be seen the foot-hills, where the coffee is grown, and, towering in magnificent grandeur above the pigmy hill peaks, the lofty cones of the Cordilleras.

Retalhulen contains about 5,000 inhabitants, three-quarters of which are probably Indians, more or less diluted with Spanish blood. At this point, which is the terminus of the railroad, the balance of the coffee crop, designed for shipment through the port of Champerico, is received.

The elevation of Caballo Blanco is 275 feet and that of Retalhulen 775 feet above the sea. Advancing to the interior from Retalhulen the country rises rapidly towards the great natural ridge which seems to form the dividing portion of Central America. At an elevation of 1,500 to 2,000 feet the first coffee trees are found. From this altitude to that of 4,000 to 5,000 feet coffee is grown, the best elevation, however, being about 3,500 feet above the sea.

Extending along these foot-hills, so called, parallel to the sea-coast, are the various coffee districts. These are known as Pamaxan, Costa Grande, Costa Cuca, Chuba, San Felipe, Ona, Cuche, Porvenir, Rodeo, San Marcos, Tumbador, etc. The country abounds in beautiful landscape scenery, embracing a wide sweep of visual range over valley and undulating hill sides to the level of the broad sea, with a great variety of wooded and open country growth and bright with the varied

3,000 feet could be reasonably desired. The country is in a high state of cultivation, with good, substantial, and, in some cases, quite elegant houses, while the equipment of machinery, in connection with the respective cafetals, is perfect for the purpose for which it is employed. Water-power abounds and is freely utilized by the planters.

The most important and valuable estates are owned by foreigners. Among these are to be found Americans, Englishmen, Frenchmen, and Germans. They are very hospitable, live well, and, as a rule, are possessed of considerable wealth.

The coffee is transported to the railroad either in ox-carts or on the backs of mules. It is put up in sacks of 130, 145, and 150 pounds, 130 being the standard and most common weight. On being received by the railroad, either at Caballo Blanco or Retalhulen, it is transported to Champerico and there delivered to the Agency Company for shipment. A large proportion of the coffee is exported to Hamburg. Next to that point London, Liverpool, and Havre rank as the largest ports of destination. After these come New York and San Francisco. Smaller quantities are shipped to Genoa, St. Petersburg, etc. Rubber in small quantities is also exported from Champerico. Hides are largely exported both to Hamburg and New York.

Although the coast lands are probably the finest in the world for the growth of sugar-cane, the natural market for sugar, San Francisco, is closed by the Hawaiian reciprocity treaty, the consequence being that only enough sugar is manufactured to supply the home demand. The imports through the port of Champerico are large and are steadily increasing, but unfortunately for our trade most of them come from Germany. A small quantity of flour is imported from San Francisco, but little else. Central America, it must be conceded, is a natural market for the United States, and especially for the products of our Pacific States, and it may be with propriety suggested that it would be a wise policy on the part of our National Legislature to enter into some character of reciprocal arrangement with the Central American Republics that would, by opening a market for their products, make a market for our own, notably in sugar. In return for their sugar we would send flour, canned goods, wines, etc. Germany has now the bulk of the trade; England and France competitively also, particularly in the matter of machinery.

About 40 miles inland from Retalhulen is the important city of Quezaltenango, situated at an elevation of 8,000 feet above the sea. This is the distributing point for the greater portion of the imports which find their way over the Champerico and Northern Transportation Company's road. The merchandise is carried from Retalhulen, where the custom-house is situated, on the backs of men and mules. The population of Quezaltenango is about 30,000, and it is the second city in point of importance, population, and trade in the Republic of Guatemala. There is located here a small cotton mill, using native cotton, and importing a small quantity from the United States.

and grow also an upland rice and potatoes, the former being their chief article of daily subsistence.

A ride from the coast, which may be made in a single day, presents a great and curious diversity of climate and products of the soil. The whole distance from the coast to Quezaltenango, by rail and mountain road, is about 70 miles. In that distance you ascend 8,000 feet. Starting from the salt works at Champerico you pass through the hot and unproductive jungle lands for some 20 miles; you then come into the cattle and pasture country, still hot; then you pass into the section of the pineapple, banana, orange, and cocoa-nut, where the temperature is still very high; from this section you rise into a more temperate zone where you also find the tropical fruits and the sugar-cane. Around Retalhulen fine tropical fruits abound, notably the pineapple, banana, orange, lime, cocoa-nut, etc. As you ascend from this point you pass into the coffee section and lose the cocoa, but still have the pine, orange, and banana. Above this you arrive at a much lower temperature, losing the fruits and coffee, and passing through an undulating, but at points arable and productive country for corn, wheat, and barley, with a steadily increasing temperature. After passing the road summit there is a descent to Quezaltenango, and you find yourself in a country devoid of timber, but fields blossoming with wheat. Should the traveler continue his journey to the city of Guatemala—southeasterly by point of compass—he would ascend to an elevation of 12,000 feet, enveloped during the mornings with clouds, and at night gaze upon the mountain sides gemmed with dewy frost sparkling beneath the magnified starlight, and among pines and oaks.

The average temperature of the coast is about 90° F. The rainfall is heavy, being something like 150 inches during the rainy season, which continues from April to November. The rains are very regular in their visitation, the days being usually quite clear until about 3 o'clock in the afternoon, when the downpour commences with great violence, accompanied by heavy thunder and vivid lightning, continuing until 9 or 10 o'clock at night, when it ceases with the same sudden character with which it commenced. This occurs nearly every day. The temperature varies but slightly either in the day or night, nor is there any material change in the different seasons. Foreigners who live temperately preserve their health fairly well, though in the course of time the climate will produce the inevitable result of its enervating character.

I have had occasion in a previous report to dwell exclusively upon coffee as the staple product of Guatemala. I may be permitted to reiterate, in connection with this sketch of its means for transportation, that the total product is about 500,000 quintals, equivalent to 50,000,000 pounds. Of this total crop about 350,000 quintals are produced in the districts which ship through the port of that name. Its grade

LENGTH AND DESCRIPTION OF THE RAILROAD.

Starting from Champerico, in latitude $14^{\circ} 17' 44''$ north, longitude from Greenwich $91^{\circ} 55' 5''$ west, the road runs in a northerly direction very nearly straight $15\frac{1}{2}$ miles to Caballo Blanco; thence it deflects to the eastward and runs to Retalhulen, a farther distance of $11\frac{3}{4}$ miles. The length of the road is $27\frac{1}{4}$ miles; length of sidings, 1 mile; total length of track, $28\frac{1}{4}$ miles; maximum grade, 3 per cent.; minimum curvature, 4 degrees; gauge, 3 feet; steel rails, 35 pounds weight per yard; number of ties per mile, 2,640 (of these about five-eighths are of native woods and about three-eighths of California red wood); size of ties, 6 x 7; length, 6 and $6\frac{1}{2}$ feet; bridges of steel with masonry abutments; buildings of wood and iron; number of locomotives, 3, two of them of 28 tons weight and one of 22 tons, all made by the Baldwin Locomotive Works at Philadelphia; number of box-cars, 30, with capacity of 8 tons; number of flat-cars, 10, capacity, 9 tons (the box-cars and 5 flat-cars were built by Carter Brothers, at Newark, Cal., and 5 flat-cars were built in the railroad shop at Retalhulen); passenger cars, 1 first-class, 1 second-class, and 1 third-class, built by Carter Brothers; 6 hand cars; 3 push cars; and 2 velocipede cars. At Retalhulen the railroad has a fine machine shop, blacksmith shop, and saw-mill. The shop is fitted with both iron and wood working machinery. There are three water-tanks, made of iron, on the line of the road.

TRAFFIC STATISTICS—YEAR ENDING JUNE 30, 1887.

Receipts.

From freight.....	\$146,158.97
From passengers	11,562.05
Total	157,726.02
Expenses of operation.....	64,613.64
Profit of operations.....	93,112.38
Percentage of cost of operations to gross receipts	41

Tonnage.

Total number of tons hauledd.....	20,995.41
Number of tons hauled one mile	471,551.71

Mileage.

Total number of miles run by trains.....	17,328
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Tariff.

	Per ton.
Average tariff rate based on freight earnings	\$6.96
Average tariff rate based on total receipts.....	7.51
Average rate on coffee exports	6.74
Average rate on miscellaneous exports.....	10.00
Average rate on all exports.....	6.78
Average rate on imports.....	9.22
Average rate on salt (local).....	2.50
Average rate on other local freight.....	4.28
Average rate on all local freight.....	

Movement of freight.

	Tons.
Total amount of coffee moved.....	16,873.69
Total amount of miscellaneous exports moved	186.25
Total amount of exports moved	17,059.94
Total amount of imports moved.....	3,015.49
Total exports and imports	20,075.43
Total local freight.....	919.98
Grand total of tons moved.....	20,995.41

Receipts.

From freight on coffee.....	\$113,672.43
From freight on miscellaneous exports.....	1,948.28
From freight on miscellaneous imports	27,803.48
From local freight	2,734.78
Total receipts from freight	146,158.97
Passenger receipts.....	11,352.05
Grand total from traffic	157,511.02
Miscellaneous rents, etc.....	315.00
Received from interest on the Government subsidy bonds.....	12,776.85
Total receipts	170,502.87

All weights are in Spanish tons, the Spanish ton containing 2,000 pounds Spanish, or 2,032 pounds English. Money is in Guatemalan currency, the average rate of premium paid in the fiscal year ending on June 30, 1888, being 30 per cent. on American gold.

The expenses of operation were divided as follows:

Superintendence and general expenses	\$20,388.63
Maintenance of track, buildings, and structures.....	16,611.85
Train expense.....	\$6,728.47
Repairs of locomotives	805.48
Repairs of cars.....	1,085.01
Water supply	912.65
Fuel.....	2,481.05
Supplies.....	1,149.28
Agencies	7,067.57
Supplies.....	541.43
Handling freight.....	3,998.02
Expenses of making collections	2,844.20
Total.....	14,451.22
	64,613.64

There is a steady and large increase going on in importation, and the production of coffee is also increasing. The Government is also now paying in the above statement there

LANDED PROPERTY IN DENMARK.

Some tables have lately been issued from the statistical bureau on the division of landed property in Denmark; being arranged according to the value of the land in "hartkorn" admeasurement, upon the tax valuation taken on January 1, 1885. The hartkorn is an old Danish basis for the land tax for taxation of the land according to its estimated quality, and may thus embrace a greater or less area than the general land measurement used in ordinary sales of land, namely, "barrels of land" (a barrel being equal to 56,000 square feet). These tables show that in Denmark there are 224,000 properties held in fee simple, viz:

	Number.	Barr. hartk.
Large estates (holdings of 12 barrels hartkorn and over).....	1,954	55,187
Peasant proprietors (holdings from 1 to 12 barrels hartkorn).....	71,678	268,967
Cottages with less than 1 barrel hartkorn	150,260	40,733

In addition to these there are 35,329 houses in the rural districts without allotment of land. Denmark's agricultural population during the century has been steadily increasing in numbers, with an increase from 1873 to 1885 of 20,000 new homesteads, answering to an increase of the agricultural population of about 100,000 souls. The larger estates are distributed as follows:

	Number.	Barr. hartk.
Estates of 30 barrels hartkorn and over	531	30,545
Estates from 20 to 30 barrels hartkorn	350	8,626
Estates from 12 to 20 barrels hartkorn	1,073	16,016

The larger landed properties in Denmark can not be said to be either very numerous or considerable as regards hartkorn valuation, the total amount of hartkorn reaching only about one-sixth and one-seventh of the aggregate hartkorn. Of the first group, manorial estates of over 30 barrels hartkorn, more than twice the number are to be found in the islands as compared with those in the Peninsula of Jutland; the second group is seen to be equally divided between these two divisions of the Kingdom; whilst the third, and by far the most numerous group (the real landed gentry's estates), are again more largely represented in the islands. Up to the year 1873 both the manorial and the landed gentry's estate were steadily retrograding, but from that period the large estates have increased both in numbers as in hartkorn; so that there are at the present day about 100 more than in 1873, with an addition of about 2,900 barrels of hartkorn—this increase taking place at the cost of the peasant proprietors. The class of peasant proprietors is distributed in the following manner, viz:

	Number.	Barr. hartk.
From 8 to 12 barrels hartkorn.....	3,718	34,871
From 4 to 8 barrels hartkorn	24,222	127,411
From 2 to 4 barrels hartkorn		

In numbers, as well as in land area, this class forms the great bulk of Denmark's farmsteads, its hartkorn embracing about three-fourths of the collective hartkorn, and its number about 97 per cent. of the collective number of farms. The first group, the large peasant farmers, is nearly twice as numerous in the islands as in Jutland. The medium-sized farms are also more numerous in the islands, whilst, on the other hand, the two last-mentioned groups are found to be twice as numerous in Jutland as they are in the islands. Again, inside of these peasant holdings no inconsiderable extent of shifting has taken place. The larger-sized farms are seen to have decreased both in number as in area, whilst the smaller-sized farms have considerably increased. From 1873 to 1875 the farms from 4 to 12 barrels hartkorn were reduced in number by 1,350, and in hartkorn 8,678 barrels, whilst the smaller farms, from 1 to 4 barrels hartkorn, have increased in number by 2,069, with 3,855 barrels. The peasant husbandry of the Kingdom in this period has thus been increased by 719 holdings, whilst their hartkorn valuation has been reduced by 4,823 barrels; of this hartkorn, 2,910 barrels have been inclosed in the large estates and in the 1,900 barrels gone to the house allotments. The 150,000 cottages with ground fall to the following groups, namely:

	Number.	Barr. hartk.
From 1 bushel to 1 barrel hartkorn	67,773	34,507
From $\frac{1}{2}$ peck to 1 bushel.....	45,850	5,718
Under $\frac{1}{2}$ peck hartkorn	36,637	508

Cottage husbandry, from 1873 to 1885, has increased in number by 19,098 and in hartkorn with 1,923 barrels. In several ways has the legislature sought to promote the establishment of cottages with allotments, so that whilst the houses in the rural districts one hundred years ago were without land these at the present time possess more hartkorn of land than the manorial estates. Not only an increasing percentage of the agricultural laboring classes has become owners of the soil, but the Kingdom has obtained an increasing number of small but independent husbandmen, a class which will always hold an important mission in aiding the further development of agriculture. Owners of houses of half a peck to one bushel hartkorn will, on the other hand, as a rule, be compelled to seek their chief means of livelihood by labor on the estates, a necessity which naturally will apply still more to the owners of cottages with less than half a peck of hartkorn as also to those entirely without any adjoining land. From 1873 to 1885 these last named have been increased by about 4,000, and now amount to 35,329. In round numbers there are now to be found in Denmark 100,000 houses, the dwellers in which, owners or tenants, must seek their livelihood in agricultural labor. The large and medium-sized houses are pretty equally divided between Jutland and the islands, while those of below half a peck of hartkorn are most

larger. Again, security is afforded to the State by these 71,000 medium-sized properties, supporting a numerous and independent class of yeomen, the real peasant freeholders. From this class is derived the best material for the army; by them the prosperity of the Kingdom is advanced, and, uninfluenced by frequent political and social agitations, they form the ballast which gives to society security and a steady and tranquil development. Furthermore, the 150,000 houses, with their small parcels of adjoining ground, lessen the distance between the peasant proprietor and the day laborer, and a prospect is held out to the industrious of an advancement to independence. Finally, the existence of the 1,900 manorial estates has its advantages, for their owners are usually the pioneers in all agricultural progress and improvements.

By the land laws of 1861 and 1872 certain bounds are placed against the too great subdivision of such properties, providing that for the due maintenance of the buildings and the occupiers there shall at all times be retained a main parcel of at least 20 barrels of land of the value stipulated according to regulated taxation rates. — COPENHAGEN, *July 19, 1888.*

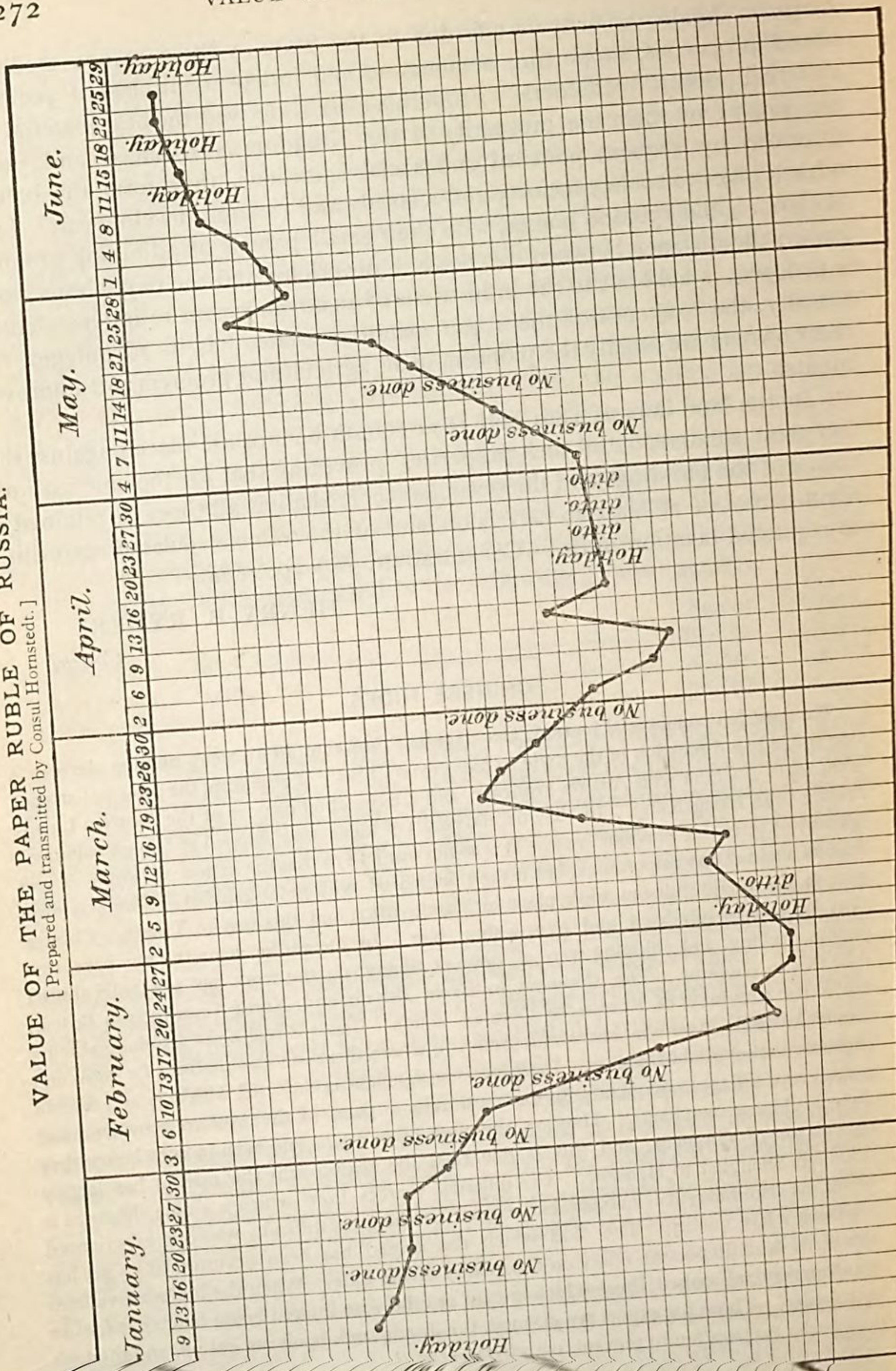
HENRY B. RYDER,
Consul.

CHINESE HIDES.

The Austrian commercial journal, *Das Handels Museum*, in a recent number devotes a long article to a discussion of the trade in hides from China. These form the principal articles in the trade of China with Austria-Hungary, and are the chief cargoes of the Austrian Lloyds steamers from Hong-Kong. In 1887 68,269 piculs of hides were shipped to foreign countries, against 77,735 in the previous year. It was not until 1876 that the export to England and America attained any importance, but it then increased with great rapidity. The first shipment to the Mediterranean took place in March, 1881, and this was to Trieste. Chinese hides are strong, sun-dried, and have a short hair. In the earlier years the purchase, preparation, packing, and shipping were all done at Shanghai; the work has gradually shifted since 1885 to Hankow. The shipment to Great Britain and North America is in British, that to the Continent of Europe in German hands. China is really not a hide-producing country like India, Australia, and South America, where there are vast pastures for herds and large slaughtering establishments. In China a consignment is collected with care and trouble in small rural villages, frequently in the most remote parts of the western provinces, and always by Chinese merchants. They are, therefore, often weeks and even months before they reach the port of shipment; and this is doubtless the reason why the market has largely shifted from Shanghai to Hankow. The different sources from which a single shipment is derived, and also differences in treatment account for the great difficulty which is experienced in obtaining a like quality. The food which the animal has been accustomed to get has naturally the most important effect on the quality of the hide. When the hides arrive from the interior they are soaked, those which are cut or otherwise injured being taken out for use in the locality. Those for export are cleaned, the heads and hoofs are cut off, and they are treated with a preparation to prevent putrefaction and the ravages of worms or insects. The freight for hides from Hankow to Trieste is 12 taels per ton. Difficulties are constantly arising on account of the tricks of the Chinese dealers, who add substances to increase the weight, and hide defects in all manner of ways.

VALUE OF THE PAPER RUBLE OF RUSSIA.

[Prepared and transmitted by Consul Hornstedt.]



TEA TRADE OF AMOY.

The native tea merchants, who advanced money to the producers, are reported as having suffered serious losses owing to the decline of prices in foreign markets, which made it impossible in many instances for them to realize here on the teas the money they had paid for the same. A native merchant is both slow and reluctant to believe that prices in foreign markets should in any way control the home price of the tea he has to sell. The foreign hong engaged in this trade are thought to have made only moderate profits, if any at all, on the season's business.

The tea trade of this port has not diminished in quantity during the past year, but the trade of the Empire in that article has suffered a very serious decline during the year. The prospect indicates a further decline in the future so long as existing conditions continue to prevail. Among the reasons for this general decline may be reckoned the increasing competition of Indian, Ceylon, and Japanese teas; the burdensome taxes and export duty, assessed without regard to value, which it has to pay; carelessness in picking and curing, and the *thrifty* but unwise native practice of indulging in too much tea-dust and other adulterations. The commissioner of customs at this port, in his annual report, speaking of the local trade, says:

The outlook for Amoy teas is not considered a hopeful one by either the foreigners or Chinese engaged in it. The increasing competition of the more lightly-taxed growths of Japan, and the diminishing cost of the better flavored Formosa leaf, make it improbable, it is said, that the common, over-taxed stuff produced in the Amoy district can long maintain a footing in the American market, *where alone it is wanted*. Owing to the losses of the native dealers which last season's business has resulted in, a diminution of 40 per cent. is confidently anticipated in the crop of the coming year which will be brought to market.

This reference by an Imperial official to the "common stuff," called Amoy oolong, which "is wanted in the American market alone," is rather interesting reading for the consumers of "the stuff" in the United States. Interesting, because what he says is doubtless true. The stuff should be discountenanced by both dealers and consumers of tea in the United States as being generally (not entirely) of too vile a quality to be complimented with the name of tea. In fact, justice to the public would justify the exclusion of a very considerable percentage of it into the United States. The foregoing does not apply to the Formosa oolongs, which are much superior to and finer flavored than the Amoy oolongs.

TEA ROUTES.

The opening of the Canadian Pacific Railroad and the establishment of the Canadian Pacific line of steamers between Vancouver, B. C., and this coast, has opened a new route for the shipment of tea to the United States. During the past year 2,230,994 pounds of tea have been shipped from Amoy to the United States by this new route in the first year of its operation, while

Oriental, and Occidental steamship lines to San Francisco. This is due to the better facilities and cheaper freight offered by the Canadian steamers to the Amoy tea men, as many of the ships of this line call at this port for tea, which the San Francisco steamers will not do. Why this trade is sought for by the Canadian competitor of the San Francisco lines and neglected by the latter I am unable to explain. Is the Canadian enterprise more wide awake to present and future advantages than its American competitors? It would seem so.

One American sailing vessel loaded a cargo of tea at this port for New York during the year. The remainder of the 18,000,000 pounds was exported to the United States in British steamers via the Suez Canal to New York. — AMOY, *June 30, 1888.*

WM. S. CROWELL,
Consul.

RESULTS OF ROTATION OF CROPS IN BADEN

A field of 10 ares in good condition, worth 300 marks, is put down in the tax book at 250 marks, the cost of cultivation in 1884 being as follows:

The fields need 10 marks' worth of dung or fertilizing stuff: carrying of 2 loads at 3 marks a load; spreading the same, 1 laborer, half a day, at 2 marks a day. Seed: 20 liters of corn, 1.6 marks; 40 liters of speltz, 2.40 marks. Plowing, sowing, etc., 3 marks. Weeding in spring: 1 workman, half a day, 50 pfennigs, or 12 cents. Cutting the grain: 1 day's pay, 2.50 marks. For binding and storing, 3 marks. Harvest results in 80 *garben* (sheaves). Thrashing and cleaning takes 3 laborers 1 day, at 1.50 marks each.

After the corn harvest, stubble turnips were put in. Cost of reploting, 2 marks; turnip seed, 20 pfennigs; the turnips were twice hoed, at a cost of 3 marks; dug up, 3 marks more. The turnip crop gave 20 centners, at 50 pfennigs a hundred.

The wear and tear on machinery, wagons, and implements was not noted. The State tax was 18.5 pfennigs per 100 marks; village or town tax, 40 pfennigs per 100 marks; church tax, 18 pfennigs per 100 marks.

RECAPITULATION, 1884.

<i>Expenses.</i>	Marks.
State tax	0.46
Town tax	1.00
Church assessments	0.45
Dung	10.00
	7.00
	4.00

	Marks.
Plowing again and harrowing	2.00
Turnip seed.....	0.20
Hoeing and digging.....	6.00
Expenses	6.00
Total expenses (outlays)	44.01
<i>Income.</i>	
Spelz	18.00
Corn	14.00
Straw	10.00
Turnips	10.00
Total income.....	52.00
Clear gain.....	7.39
Per cent.....	2.46

The next year (1885) large turnips were planted. The setting of those over the winter cost 1.60 marks. In the spring 3,000 plants, at 70 pfennigs per 100, were bought; 2 loads of dung, at 5 marks a load, 10 marks; plowing and harrowing, 2 marks; 2 day laborers, at 2 marks a day, 1 day setting out plants, 4 marks; the field was sprinkled with 2 barrels of urine or liquid manure, 3 marks; two laborers hoed the field twice, 3 marks; the digging took 3 laborers 1 day, 3 marks; transport to the house, 2 marks. The field yielded 2,500 kilograms, at 1 mark per kilogram.

RECAPITULATION, 1885.

<i>Outlays.</i>	Marks.
State tax	0.46
Village tax	1.00
Church tax	0.45
Plow	1.60
Plants	3.00
Dung	10.00
Plowing and harrowing.....	2.00
Pay for setting plants.....	4.00
Urine.....	3.00
Hoeing, digging, etc.....	13.00
Total outlays.....	38.51
Income.....	50.00
Clear gain (3.83 per cent. on land value).....	11.49

The field remained over winter untouched, except that it was "turned up" at a cost of 1.60 marks. In spring, 1886, it was plowed once, sowed, and harrowed, costing 3 marks. The sowing took 30 liters of barley seed, 4 marks; 2 liters (or $\frac{1}{2}$ kilogram) of clover seed, 3 marks; for mowing the barley, 1 day's labor, 2.50 marks; binding and housing, 3 marks. Thrashing: 3 laborers, at 1.50 marks per day, 4.50 marks. Crop: 6 centners of grain, at 7 marks, 42 marks; 7 centners of straw, at 1.80 marks

RESULTS OF ROTATION OF CROPS IN BADEN.

RECAPITULATION, 1886.

<i>Outlays.</i>	<i>Marks.</i>
State tax.....	0.46
Town or village tax.....	1.00
Church tax.....	0.45
Turning up soil.....	1.60
Plowing, sowing, harrowing.....	3.00
Barley seed.....	4.00
Clover seed.....	3.00
Mowing.....	2.50
Binding and housing.....	3.00
Thrashing and cleaning.....	4.50
Total outlays.....	23.51

<i>Income.</i>	
Barley.....	42.00
Straw.....	12.60
Total income.....	54.60
Clear gain (10.36 per cent. on land).....	31.09

The clover crop for 1887 was sold for 30 marks.

RECAPITULATION, 1887.

<i>Outlays.</i>	<i>Marks.</i>
State tax.....	0.46
Town tax.....	1.00
Church tax.....	0.45
Total.....	30.00
Clear gain (9.36 per cent. on land value).....	28.09

Average results.

Articles.	Year.	Per cent.	Average.
		<i>Marks.</i>	<i>Marks.</i>
Field fruits.....	1884	7.39	2.46
Turnips.....	1885	11.49	3.83
Barley.....	1886	31.09	10.36
Clover.....	1887	28.09	9.36

If the owner or renter of the field did the work himself, he saved or earned for himself:

	<i>Marks.</i>
1884.....	28.50
1885.....	20.60
1886.....	14.60

COST OF FARM LABORERS.

Only farmers owning or renting large farms of from 7 to 15 hectares can afford to keep help. A small farmer, working 6 to 10 acres, can get no more from his farm than a living for himself and family. The cost of keeping 1 man and 1 woman on a farm is put down at the following rates:

For a man.

	Marks.*
Yearly salary.....	180.00
Board and lodging:	
Breakfast.....	0.35
Dinner.....	0.50
Supper.....	0.35
Daily	1.20
Yearly	438.00
Total	633.00

For a woman.

Year's salary.....	120.00
Bread, etc., 1 mark a day	365.00
Present of a dress at Christmas.....	10.00
Total	495.00

The cost of keeping both man and woman is 1,128 marks (\$268.46), or the interest on 2,800 marks, or the profits of a 10 or 12-acre farm.—MANNHEIM, *August 17, 1888.*

J. C. MONAGHAN,
Consul.

TELEGRAPH COMMUNICATION OF NICARAGUA.

The telegraph line of this country, which is owned and managed by the Government of Nicaragua, has recently been extended to San Carlos, which is situated at the east end of Lake Nicaragua, at the point where it discharges into the River San Juan, 120 miles from San Juan del Norte.

The line, as operated during the past three years, connects Managua with Granada, Rivas, San Juan del Sur, Corinto, Massaya, Leon, and other points of importance in the interior and west side of the Republic.

For some months a branch, by way of Granada, extending around west and north of Lake Nicaragua, has been maintained by way of San Ubaldo and San Miguelito, both of these places being on the north side of that lake, the last named pueblo being the site of the most eastern telegraph station. At San Juan del Sur connection is made with the line of cable company by a branch line by way of Granada, so that by the extension of that branch from San Miguelito to San Carlos, where an office has been established by the Government, San Juan del Norte is now within 120 miles of being in reach of communication.

While the Government has been for years proposing to extend the line

line of telegraph through the almost impenetrable swamps extending 15 miles west from San Juan will prevent the Government from embarking in an undertaking so difficult in problems of engineering and so costly in execution. — SAN JUAN DEL NORTE, NICARAGUA, *August 1, 1888.*

WM. A. BROWN,

Consul.

EXPORT TRADE OF SANTIAGO DE CUBA.

The chief industry of this consular district is the production of sugar. In this industry the largest increase of exports during the fiscal year just passed is found, Guantanamo alone exporting \$377,249.76 worth of sugar more than during the fiscal year 1886-'87. Manzanillo shows an improvement in the export of sugar over the fiscal year 1886-'87 of \$91,971.61. This small increase, however, only refers to direct shipments to the United States. During the past fiscal year several sugar estates, some of them the result of American capital, have been completed, and have commenced working in the jurisdiction of Manzanillo. Owing to the cheapness of freights in Cienfuegos, a good deal of Manzanillo sugar has been shipped there by coast steamer, and from there found its way to the United States. In Guantanamo the crop has been larger and the work of grinding cane has been more centralized, the smaller estates sending their cane to the larger ones to grind. In August of last year the Spanish Government took off the export tax of \$2.40 net from sugar, but in July of this year has again imposed a tax of \$1 per ton for every ton of cargo exported from this island, thereby relieving the vessel from tonnage dues, but putting this tax on the shipper, so that the sugar planter is not much better off to-day than he was before, although, naturally, freights will fall in proportion. A circular issued by a banking house in Manzanillo shows 38 per cent. of the whole crop from January 1 to June 30, 1888, shipped to Cienfuegos, and the rest, with a very small percentage to Barcelona, Spain, to the United States direct. An increase of about 30 per cent. is shown in the export of iron ore from this place. The business of exporting this mineral is entirely in the hands of the Juragua Iron Company, and this gain is the result of the energy and perseverance of this company, as the difficulties to overcome with the Spanish officials and the dearth of working-men are by no means small. The company is increasing its business every day, and is importing labor from Spain, with what result is still to be seen. Of course, having special concessions from the Madrid Government, this company is exempt from the export tax of \$1 per ton of cargo exported.

A decrease from \$296,194.99 for 1886-'87 to \$80,676.72 for 1887-'88 is shown in the export of mahogany logs. This is owing to the low prices here to incur the

ness is gradually declining here and falling into the hands of an American capitalist, who ships his wood from Nipe Bay, on the north coast. The Santa Cruz wood, being as a general thing small, is mostly shipped to Europe.

The fruit trade, owing to the lack of facilities for rapid transportation, is completely at a stand-still. I have no doubt that were this business properly managed and inducements given the country people to grow fruit, and then establishing a direct line of fruit steamers, within a few years the fruit trade of this consular district could rival the export of fruits from Baracoa to the United States. The soil in the immediate vicinity of this city is especially adapted to the cultivation of pine-apples and bananas, and the coast lands favor the growth of the cocoa-nut palm.

The exportation of dry salted hides has decreased, owing to low prices in New York. The good hides of 30 pounds and upwards are nearly all tanned here, and the smaller ones, averaging 23 pounds, are shipped to New York.

In closing, I would call your attention to two small items, copper and manganese ore, of which only a few tons have been shipped to the United States. An American company has been formed here with the object of working some of the manganese deposits largely found in this province. The chief difficulty this company encounters is transporting the ore, and until they can build a railroad from their mines to connect with the railroad now running some 27 miles into the interior their output of ore must necessarily be small. At present the ore is put up in bags of 100 pounds each and transported to the railroad in ox-carts.

Before the revolution, which I might almost say nearly ruined this province, large copper mines, situated at the village of Cobre, some 12 miles from here, were worked on an enormous scale by several English companies. Now the mines are abandoned and filled with water, the buildings burned down, and the machinery useless. The railroad to the bay of Santiago de Cuba, where the ore was put on board the vessels for export, is partly destroyed, most of the bridges being burned down and the road-bed being washed away in many places.

Some time ago an American syndicate was negotiating with the representatives of these mines, and the last rise in copper gave hopes that something might be done towards reopening the mines, or, at least, pumping out the water from the shafts and precipitating it to gain the oxide of copper, but no agreement, it seems, could be reached.

Comparative statement of exports of sugar from the consular district of Santiago de Cuba, including Guantnamo, Manzanillo, and Santa Cruz.

	1886.	1887.	1888.
Quarter ending March 31.....	\$1,004,130.29	\$897,611.19	\$1,400,216.50
Quarter ending June 30.....	1,218,364.62	1,010,196.03	1,427,091.64
Quarter ending September 30.....	574,572.23	307,002.77	.....
Quarter ending December 31.....	231,137.62	381,117.41	.....

Statement of exports to the United States from the United States consulate of Santiago de Cuba and dependencies thereof (Guantanamo, Manzanillo, and Santa Cruz) from July 1, 1887, to June, 30, 1888.

Articles.	Quarter ended Sept. 30, 1887.	Quarter ended Dec. 31, 1887.	Quarter ended March 31, 1888.	Quarter ended June 30, 1888.	Total.
Bananas		\$50. 70		\$183. 45	\$234. 15
Cacao.....			\$427. 37		427. 37
Cedar logs	\$864. 72	15,180. 03	1,416. 24	999. 56	18,460. 55
Cigars	913. 66	1,258. 84	619. 57	899. 89	3,691. 96
Cocoa-nuts.....	558. 46	1,480. 10	1,659. 35	3,499. 63	7,197. 54
Cocus-wood		100. 00		47. 11	147. 77
Copper ore.....		2,984. 96	400. 02	305. 24	3,690. 22
Deer skins		23. 30			23. 30
Fruit.....				20. 97	20. 97
Guava jelly			25. 70		25. 70
Hides, dry salted.....	6,221. 45	5,491. 80	2,013. 70	2,633. 70	16,360. 65
Honey.....			3,173. 34	544. 80	3,718. 14
Iron ore.....	37,934. 26	32,600. 66	70,115. 33	125,135. 47	265,785. 72
Iron-wood.....	121. 82				121. 82
Lance-wood spars		186. 40	800. 00	1,786. 66	2,773. 06
Mahogany boards	3,255. 03	2,386. 25	5,073. 58	3,761. 26	14,476. 12
Mahogany logs.....	35,075. 66	38,590. 24	1,736. 29	5,274. 53	80,676. 72
Manganese ore				7,322. 53	7,322. 53
Molasses.....	3,830. 40		11,045. 05	19,227. 20	34,602. 65
Oil barrels (empty, returned).....	335. 52	305. 69			641. 21
Old copper, cement.....				644. 51	644. 51
Palm leaves, etc.....	1,515. 00	771. 50	307. 00	460. 00	3,053. 50
Pine-apples			14. 72	539. 14	553. 86
Returned goods	459. 47	170. 33		7. 27	637. 07
Rum (Jamaica).....				85. 69	85. 69
Specie (bullion).....	5,784. 83				5,784. 83
Stallion				401. 00	401. 00
Sugar.....	307,002. 77	381,117. 41	1,400,216. 50	1,427,091. 64	3,515,428. 32
Sundries			3. 38	38. 70	42. 08
Tobacco (leaf)	454. 24	4,277. 99	18,961. 57	2,331. 37	26,025. 17
Total	404,327. 29	486,976. 20	1,518,508. 71	1,603,244. 98	4,013,057. 18
Same time last year	795,472. 31	351,778. 56	1,035,740. 29	1,224,586. 80	3,407,577. 96
Increase		135,197. 64	482,768. 42	378,658. 18	605,479. 22
Decrease	391,145. 02				

SANTIAGO DE CUBA, *August 24, 1888.*

OTTO E. REIMER,
Consul.

CONTRABAND TRADE IN SOUTHERN BRAZIL.

The contraband will always keep pace, in some measure, with fair trade.—BURKE.

The declaration of Burke is not only true, as applied to the state of affairs in this province, but the contraband is rapidly extinguishing legitimate trade. Within the year last past it has gained such formidable proportions as to become open, daring, and notorious. It is, perhaps, not incorrect to say that it is more extensively carried on in the province of São Pedro do Rio Grande do Sul than in any other country that attempts to enforce the

A tariff is imposed on almost all articles of import by the Imperial Government, then again, on many articles is imposed a tariff by the provincial government of the port in which the goods are landed; for instance, on the tariff-list for the Empire coal is marked free, yet in this port a duty of 5 per cent. is charged by the provincial government. Tariff is collected here on articles imported from other provinces (Brazilian products), not on all, but on some of them. In this province there are slaughtered every year over 1,000,000 head of cattle for export.

The establishments where the cattle are killed and the beef cured are called *saladeros*, and they constitute the industries of the country. Instead of fostering and protecting that which constitutes the commercial life of the province a direct duty of $13\frac{5}{8}$ per cent. is levied on all hides exported, and $4\frac{1}{8}$ per cent. on *xarque*, or dried beef, by the provincial government.

As a result the large *saladeros*, which a short time since were all located in the eastern part of the province near the large cities, are moving to the west, where they can run the hides and beef across the western boundary line into the Argentine Confederation or the Republic of Uruguay. When once across transportation is ample and easy by the Uruguay River to Montevideo, where no export duty is charged by the Government of Uruguay, and where hides command a higher price, for they are sold as Uruguayan products. Hides taken from cattle killed in the Rio de la Plata region are thicker, on account of the cooler climate, and are worth more money in the markets.

It is, therefore, decidedly to the interest of the cattle breeder and owners of *saladeros* to dodge the Brazilian officials, go to market through the back door of the western frontier, save the export duty, and realize more money in Montevideo for hides than they could get in the markets at home.

There is still another thing which injures the trade of all the cities in the eastern part of this province; a vessel of from 200 to 250 tons burden, sailing, can not enter and clear this port without incurring an expense of at least \$435 for bar dues, anchorage, towage, and pilotage, consequently freight must be higher to and from this port than the rates for other more favored points.

The amount of Brazilian products that go over the frontier is not known, but the following figures show a decline in exports to the United States from this port:

For the quarter ending March 31, 1887, exports to the United States amounted to.....	\$284,005.82
Ending March 31, 1888.....	212,631.40
Decrease.....	71,374.42
Ending June 30, 1887.....	\$232,054.84
Ending June 30, 1888.....	89,727.27
Decrease.....	142,327.57

The exports to the United States which consist of wool, hides, hair,

months of 1887, declined in value \$213,701.99, and I am confident, from the general complaint of exporters, that there is a corresponding decline in the value of the same articles exported to other countries.

São Pedro do Rio Grande do Sul is the most southern province in the Empire of Brazil, lying between the 27th and 34th parallels of south latitude, bounded on the north by the province of Santa Catharina, on the east by the Atlantic Ocean, on the south by Uruguay, and on the west by Uruguay and the Argentine Confederation, the boundary line, however, between this province and the latter-named country being the Uruguay River, and has a western frontier line of over 600 miles, across which the extensive contraband business is now carried on by both exporters and importers.

To reach Brazil with contraband goods, shipments are made to Montevideo, from thence up the Uruguay River by steamers to Concordia, in the Argentine Confederation, where goods are transported to a railroad, on account of the falls in the river, and taken to Salto, from which place they are re-shipped in steamers and delivered along the frontier of this province at such points as best suits the contraband trade. The goods are then loaded into large bullock carts, and under the escort of armed men a train of a dozen or more of these carts will start for an inland town, where the business house of the importer is located, many of these goods eventually reaching the cities of Porto Alegre, Pelotas, and Rio Grande do Sul.

The Rio Grande and Bagé Railroad, which runs from this city almost west to Bagé, 174 miles, and within three days' travel of the Uruguay frontier, formerly shipped merchandise from this city west; now a large quantity of general merchandise comes from Bagé, last to Pelotas and Rio Grande. And in the article of Chinese tea alone, I was informed by the general superintendent of the road that as much as 1 ton per month passed over the road from Bagé to the east, much to Pelotas and Rio Grande. There is no doubt but every ounce of it was contraband, smuggled across the line, as the duty is 34½ cents per pound.

So earnestly and frequently has the Government been appealed to by commercial associations of the cities of this province for aid to suppress this trade, or for legislation that would make it unprofitable, that the late Minister of the Revenue, Senator Francisco Belisario Soares de Sousa, in a recent report said in substance that the suppression of the contraband trade in this province was one of the most important things to be considered by the Government, that proper means had been resorted to by the Government to suppress it, but it was evident it had not succeeded, but instead the business was increasing. Among other measures by which the evil was sought to be remedied was a special tariff for this province, which went into effect January

1879, abating the duty on thirty-five articles most consumed in the Empire, it was

spond with the advantages expected, and thus the great difficulty in the way of a suppression of the traffic was the establishment of a fiscal police on and along the frontier as vigilant and honest as it should be.

On the 14th of February last the Chamber of Commerce of Rio Grande do Sul prepared an address to Her Imperial Highness the Princess Regent, in which the state of trade was reviewed, noting that the bar commission and Imperial authorities were doing nothing toward the improvement of the bar. After referring to the agricultural industry, and its importance in every respect in the colonies, and the pastoral interests of the province generally, it proceeded to show that all legitimate business was on the decline, and that every demand for wholesome and beneficial legislation for the province has been ignored by Parliament, and that the great industries of the country, the *saladeros*, were moving to the west, and the wealth of the country was passing out through the ports of Uruguay.

The Chamber of Commerce of Porto Alegre, on the 19th of May last, also prepared a lengthy representation to the Princess, in which it was agreed that, although the duties were materially reduced under the special tariff law of 1879, yet the Government received more revenue from imports in the three years next succeeding that year than it did under the higher rate imposed for the three years immediately preceeding the establishment of the special tariff, and that the only remedy against contraband trade is a still further reduction of tariff on imports and exports to such an extent that smuggling will be unprofitable.

The following statement shows the amount of tariff collected on importations for three years immediately before and for three years next after the special tariff for the province of São Pedro do Rio Grande do Sul, which, as before stated, was passed in 1879:

For fiscal year 1875-'76.....	\$1,620,290.17
For fiscal year 1876-'77.....	1,661,012.86
For fiscal year 1877-'78.....	1,437,328.72
Total for three years before 1879	\$4,718,631.75
For fiscal year 1878-'79.....	1,896,839.84
For fiscal year 1879-'80.....	2,124,026.24
For fiscal year 1880-'81.....	2,030,762.54
Total for three years after 1879.....	6,051,628.62
Difference in favor of special tariff.....	1,332,996.87

While the special tariff act of 1879 benefitted legitimate trade for a time, yet, within the last two years, smuggling has increased to an alarming extent; taking the receipts of the custom-houses in Porto Alegre and Rio Grande for the first four months of 1887, and compare them with the first four months of 1888, the increase of the business can be better understood, as shown by the following statement:

Months.	Rio Grande do Sul custom-house.		Difference.	
	1887.	1888.	More.	Less.
January	\$98,083.82	\$87,509.32	.....	\$10,574.50
February	94,745.15	78,808.77	.....	15,936.38
March.....	107,623.72	89,799.13	.....	17,824.58
April.....	93,887.45	89,062.03	.....	4,825.42
Total.....	394,340.14	345,179.29	.....	49,160.88

Months.	Porto Alegre custom-house.		Difference.	
	1887.	1888.	More.	Less.
January	\$103,660.33	\$106,083.25	\$2,422.92	.....
February	124,923.08	103,331.76	.....	\$21,590.87
March.....	153,150.97	92,565.11	.....	60,630.86
April.....	131,635.78	82,682.06	.....	48,953.72
Total.....	513,370.16	384,662.18	2,422.92	131,175.45

Receipts less in Rio Grande do Sul.....	\$49,160.88
Receipts less in Porto Alegre	128,752.53
Total in four months.....	177,913.41

On the 16th of June the Chamber of Commerce at Porto Alegre went so far as to pass resolutions asking the Imperial Government to take immediate steps, by military force or otherwise, to suppress the contraband on the western frontier, and if it did not, no more goods would be dispatched from the Porto Alegre custom-house by the importers, and if the Imperial Government thought proper, the resolutions requested that the president of this province be vested with the right to use such means as would extinguish the contraband trade at once. Copies of these resolutions were telegraphed to the chambers at Pelotas and Rio Grande asking similar action there; the chamber of Rio Grande was called in meeting, but, whilst it deplored the condition of affairs, it concluded to await the result of their February address to the Princess, and declined to pass resolutions which might be construed as threats against the Government at this time. All fair minded importers are of opinion that there is but one remedy for the evil, and that is to still reduce the tariff on imports, make them so low that there will be no inducement to enter the province through Uruguay over the western frontier, but that its ports will be practically free.

As the matter stands to-day no merchant who imports his goods and pays the tariff can compete with those who smuggle and who sell smuggled goods. A number of reputable merchants have been com-

GERMAN FAMILY BUDGETS.

[From the Bulletin de Statistique et de Législation Comparée, July, 1887. — Translation.]

In the Staatswissenschaftlichen Seminar, founded at Halle by the learned Dr. J. Conrad, Mr. Carl Hampke publishes a study of the budgets of private families. In it are found the results of the principal researches made during fifteen years to measure the prosperity of populations by the expenses and revenues of a typical family and by the prices of the necessities of life. The author has added a personal inquiry bearing upon the expenses of certain families living in Halle, and upon the influence of an increase in the cost of living in what bears upon their budgets.

The following are the annual expenses of these families:

Nature of expenses.	Working-man.*		Rentier.†		Manufacturer.‡		Superior employé.§	
	Amount of expenses.	Proportion.	Amount of expenses.	Proportion.	Amount of expenses.	Proportion.	Amount of expenses.	Proportion.
	Marks.	Per Ct.	Marks.	Per Ct.	Marks.	Per Ct.	Marks.	Per Ct.
1. Food	555.40	52.9	1,246.00	40.90	2,211.00	28.0	2,842.00	16.0
2. Clothing	163.70	15.8	314.04	10.30	863.25	10.5	1,554.00	8.5
3. Lodging	140.15	13.4	552.85	18.10	1,234.47	15.5	4,000.00	22.3
4. Fire-lighting	59.70	5.7	91.70	3.01	238.93	3.0	470.00	2.6
5. Medical attendance.....	23.15	2.2	75.00	2.50	211.43	2.7	675.00	3.7
6. Cleanliness.....	22.15	2.1	30.00	1.00	278.75	3.5	1,350.00	7.4
7. Savings.....	20.80	2.0	10.00	30	250.50	3.1	915.00	5.0
8. Education	18.60	1.8	317.82	10.40	565.46	7.1	1,210.00	6.7
9. Taxes	10.85	1.0	70.56	2.30	454.00	5.7	895.00	4.9
10. Service			73.00	2.40	450.00	5.7	2,750.00	14.7
11. Pleasures	14.40	1.4	190.50	6.20	501.75	6.3	1,150.00	6.3
12. Sundries.....	20.30	1.7	73.08	2.59	712.76	8.9	335.00	1.9
Total	1,049.40	100.00	3,045.15	100.00	7,945.30	100.00	18,206.00	100.00
Total expenses, 1 to 5...	942.20	90.00	2,279.59	74.81	4,732.08	59.7	9,601.00	53.1
Total expenses, 5 to 12..	107.29	10.00	765.56	25.19	3,213.22	40.3	8,105.00	46.9

Mr. Hampke has calculated upon the mean price in 1851-'60, 1861-'70, 1871-'75, 1876-'80, and 1881-'85 what these four families of Halle would have expended annually in each of these different periods had the same regulations of life continued.

In the absence of prior returns, the taxes of the period 1861-'70 serve as the basis of comparison. It will be seen that in Halle the families of working men now pay a little less in taxes than they have for thirty years; but, on the contrary, much more for their lodgings. The expenses classed under the head of propriety will be found less heavy than at any previous period for workingmen, on account of the low price of soap. The rise in the wages paid wash-women was the cause of increasing these expenses in other families.

* Average budget of three families of working people: (1) Husband (a painter), wife, and child of five years; (2) husband (a road keeper), wife, and two children, five and ten years old, respectively; (3) husband (a tailor) and six children, eldest fourteen years old.

† The family of the *rentier* comprises the husband, wife, a boy of eighteen years, another of ten years, and a daughter of three years.

‡ The family of the manufacturer comprises the husband, wife, boy of eleven years, another of seven, a daughter of nine, and a servant.

§ The family of the superior employé comprises the husband, wife, a child of more than fourteen, three of less than fourteen, and four servants.

He has represented by 100 the expenses of 1851-'60, and has obtained for the other periods the following proportional variations :

Families.	Food.	Lodg- ing.	Cleanli- ness.	Taxes.	Serv- ice.
<i>Period 1851-'60.</i>					
Working-man	100.0	100.0	100.0	.....	100.0
Rentier	100.0	100.0	100.0	.....	100.0
Manufacturer	100.0	100.0	100.0	.....	100.0
Superior employé.....	100.0	100.0	100.0	.....	100.0
<i>Period 1861-'70.</i>					
Working-man	101.0	125.0	101.0	100.0	.....
Rentier	104.0	116.0	101.0	100.0	112.0
Manufacturer.....	103.0	107.0	101.0	100.0	105.1
Superior employé.....	100.7	105.0	101.0	100.0	105.4
<i>Period 1871-'75.</i>					
Working-man	125.0	166.0	95.0	106.7	.....
Rentier	123.0	142.0	116.0	103.4	120.0
Manufacturer.....	122.0	128.0	118.0	100.5	119.6
Superior employé.....	118.0	126.0	116.0	100.6	128.7
<i>Period 1876-'80.</i>					
Working-man	122.8	168.0	93.0	109.8	.....
Rentier	125.7	150.0	125.0	106.6	135.0
Manufacturer.....	125.0	130.0	131.0	101.9	130.3
Superior employé.....	120.7	131.0	119.0	102.9	139.0
<i>Period 1881-'85.</i>					
Working-man	121.8	190.0	84.0	81.6	.....
Rentier	128.7	101.0	128.0	101.1	135.0
Manufacturer	126.0	129.0	132.0	102.4	134.8
Superior employé.....	123.0	130.0	131.0	103.5	140.0

SILVER MINES AT JEHO.

Three hundred miles northwest of Tien-Tsin, and half that distance north of the Great Wall, are the only silver mines known to be worked in all China. The mines are situated in the prefecture of Chêng-tê-tu, a jurisdiction embracing a tract of country as large as the State of Pennsylvania, nominally belonging to the province of Chihli, but really under a separate local government centered in the city of Chêng-tê-tu, better known as Jêho, where a military governor is stationed, who is appointed direct by the Emperor, and holds his office for three years. This country forms the greater part of eastern Mongolia, and extends north of the Great Wall from the longitude of Peking eastward to the sea, and from the Great Wall northward to the Russian frontier of Siberia. It is very mountainous, sparsely populated, badly watered, and has but little soil suitable for cultivation. The trade and tillage are everywhere in the hands of Chinese settlers, the native Mongols not being met with save in the extreme northern part of the coun-

raising cattle.

the natives for thirty years with more or less success, and during that time have probably yielded silver to the value of about \$2,000,000, the mining and smelting being done entirely by Chinese methods. The ore is argentiferous lead or galena, and is found in thin, pay streaks, scattered through veins which occur between porphyry and limestone. Both mines are in high hills, which have been burrowed with native workings and stripped of all ore found above water-level near the base of the hills. During the past ten years the mines have produced very little ore; the native miners reached the water-level, and so came to the end of their resources, as they had no means to remove the water. Although these miners work in a very primitive way, with rude tools and no blasting-powder, pumps, or machinery of any kind, the results they have accomplished are remarkable. Long, tortuous galleries, large enough to admit a man on hands and knees, have been cut through the hardest rock in every direction, the ore and waste-rock being laboriously carried to the surface in bags. The treatment of the ore thus extracted is also remarkable, for these uninstructed Chinese have, by long experience, discovered for themselves the rudiments of the science of smelting and refining silver ores, and are able to produce pure silver with the simplest possible appliances.

Of late years the proprietorship of these mines, worked under a license from the Government, for which a royalty of 33 per cent. of gross yield has been paid, has passed from hand to hand with steady loss to the investors. The last proprietors, a native joint-stock company, abandoned the place in despair after losing all their capital, about \$250,000.

At this time the condition of the mines was brought to the attention of the grand secretary, Li Hungchang, viceroy of this province, and he determined to have them carefully examined and reported on by a foreign mining expert. The viceroy had engaged the services of Mr. John A. Church, of New York, a mining expert of reputation in the United States, and it was arranged for Mr. Church to examine the mines. He spent several months of last year at this work, and reported to the viceroy that the prospects justified an outlay of money for pumping and hoisting machinery and for labor to open up the mines fully for a more extended survey. The viceroy agreed to this, and furnished the funds for the machinery, which was bought in San Francisco of the Union Iron Works. Work has now been going on at the mines under Mr. Church's supervision for six months. Shafts have been sunk at both mines and the water pumped out of one. Native miners have been taught the use of foreign tools and explosives, so that the results of one day's work by the new method are greater than those of one month by the old. Mr. Church has a staff of four Americans (an assayer, an engineer, and two miners), and has been able to keep work going on at both mines with a force of 200 native workmen. He has now opened up the mines sufficiently to form a definite opinion, which is a favorable one, and the work promises to be permanent and successful. More machinery.

making a total of about \$50,000, has been ordered from the United States, and the success of these mines is likely to open up a much larger field for similar enterprises.

GOLD MINES ON THE AMOOR RIVER.

Subsequent to the opening of the above silver mines by American engineers and machinery the gold fields on the Chinese or south side of the Amoor River were brought prominently forward. The placer workings on the Mo River, a small tributary of the Amoor, have long been famous, though in a rather vague way, as a rich gold field. The immense distance of this field from the nearest Chinese towns in that desolate part of northern Manchuria has hitherto discouraged all thoughts of working them systematically. But last year the Chinese governor of the Amoor River district gave serious attention to the question and sent an official to examine the fields. The official returned after six months of travel and investigation, and though he reported immense difficulties to be overcome in reaching and living in those remote fields, yet the gold was so plentiful that it would repay all efforts.

The governor, therefore, approved of the report and memorialized the Emperor favorably. A decree from the Emperor authorized the mines to be opened, and the official in question, Li Chin-yung, was appointed director of the company to be formed. Mr. Li lately visited Tien-Tsin and Shanghai and endeavored to obtain a loan from the foreign banks and syndicates, but they all declined looking upon the project to invest money in that remote and uninhabited region as but little less than an investment in the moon. Nothing remained but for the Chinese Government to furnish the money, and this has been done by the viceroy, Li providing 100,000 taels and the governor of Amoor 30,000, making 130,000 taels capital given to Mr. Li, who has gone to Shanghai to find men and machinery to take to the Amoor River.

This shows the earnest desire of the Government and high officials to develop the mineral resources of this country. Such efforts can not but do for China what mining activity has accomplished in other countries, and especially in the United States, namely, strengthen the Government, enrich the people, and open up new districts and highways for the general good.—
TIENTSIN, July 14, 1888.

E. J. SMITHERS,
Consul.

IMPORTS INTO RIO GRANDE DO SUL.

This province, São Pedro do Rio Grande do Sul, has a superficial area, variously given by geographers and engineers at from 118,755 to 140,000 square miles. Its exact limits cannot be determined, depending somewhat upon the result of legislation and international treaty. However, at the least, it exceeds the aggregate area of the States of Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, and New Jersey by 1,163 square miles. It is the most southern province in the Empire, lying between the 27th and 34th parallels of south latitude, bounded on the east by the Atlantic Ocean, on the south by Uruguay, and on the west by Uruguay and the Argentine Republic. The temperature in the interior ranges from 27° above zero (F.) in winter to 90° in the summer. On the coast it is considerably warmer, as it never freezes in this city, which is in 32° south latitude.

The interior is slightly broken by the termination of a range of mountains extending southwest from the province of Bahia, a distance of 1,600 miles, called in this province Sierra de Martinho. The highest point in this range—in this province—is 3,000 feet; the mean elevation, however, is about 1,800 feet. This range of mountains constitutes the dividing line of the two great hydrographic basins into which this province is divided, one being drained by the Uruguay River and its tributaries and the other by the numerous feeders of lakes Patas and Mirim, which lie in a chain a short distance inland, parallel with the entire coast of the province. The lands of the Uruguay valley, and especially those along the coast are very flat.

The population of the province in 1877 was 944,616, of which number 8,436 were slaves, now free by the decree of May 13, 1888. About 200,000 of the white population are of foreign birth, chiefly Italians and Germans; however, German immigration is falling off now, and the Italians far exceed all other nationalities combined.

These immigrants have settled in separate colonies, which are thrifty and industrious, the Italians cultivating the vine and the Germans grain and vegetables. They labor under some disadvantage at present in not having proper and sufficient means of transportation to market for the products of their labor, but they seem patient under the circumstances, and no doubt good roads will soon be built throughout these colonies for their special benefit. As a rule immigrants have not the means to engage in cattle raising, so these colonies are devoted to agriculture and vinticulture.

This province has great advantages of climate not enjoyed by any other province of the Empire. Within it are grown all the tropical fruits—peaches, pears, and vegetables of every kind the year round in the open air. In the interior can be grown wheat and corn, and the pasturage is unsurpassed in the country. The chief industry is sugar.

of which about 1,000,000 head are slaughtered annually at the different *saladeros*, the meat dried, consumed locally, and exported. All the hides are exported except about 100,000.

There are no means of ascertaining what portion of the province could be cultivated, but certainly the greater part of it. Its sources of wealth are various, but all enterprises for their development are retarded by individuals who have exclusive grants or special privileges for a term of years from the Government, and who fail to operate under them, or permit any one else to do so without charging a large royalty for these grants and privileges, and as a result there is but little development of the natural resources of the country.

Lead, silver, iron, and copper, which are known to exist, are but little worked. The first three are not found in very paying quantities; but the copper ore is very rich, yielding 60 per cent. pure metal. There is some bituminous coal, but of an inferior quality, and the operation of mining seems to be attended with too much expense to be profitable, consequently most of the coal consumed by steamers, locomotives, and gas-works is imported from England, and is worth here \$18 per ton.

In this province there is excellent marble, both white and colored; also granite and agate, much of the latter being exported to Europe. The chief towns of the province are Puerto Alegre, the capital, with a population of 40,000; Pelotas, 10,000; Rio Grande, 14,000; and Jaguarao, in the eastern part; Santa Maria, Santa Gabriel, and Santa Anna de Liveramento, in the interior; Uruguayana, Bagé, Itaqui, and Alegrete in the western part.

To show the state of trade in this province I append, as a part of this report, tabular statements, upon which it is unnecessary to make any comment, as the figures speak for themselves. The figures are not now obtainable for the fiscal year 1887, but will be published in the next report of the local chamber of commerce, which will not be completed for two months yet, at least. Upon my application to A. H. Edwards, United States Consular Agent at Puerto Alegre, for simply the consolidated returns of exports and imports of the province for the fiscal year 1887, and the total amount imported from the United States, he replied, under date of the 3d instant, as follows:

The official value of all imports from July 1, 1886, to December 31, 1887, was \$6,349,029.50; exports for same period, \$1,364,217. It is impossible to obtain the figures for the year 1887 only, as the above eighteen months have been taken together for statistical purposes, in order to change the fiscal year from July to June. I could not obtain the separate imports of American goods, as discrimination of the origin of imports is no longer kept up. So far as imports are concerned, I consider the above figures of little value, as official valuations bear scarcely any relation to the real cost of goods, and, of course, no account is had of immense contraband trade.

is well qualified to

are concerned, the figures given to Mr. Edwards are certainly misleading. The records of this office show that during the eighteen months included in the period from July 1, 1886, to December 31, 1887, there was exported from this province to the United States alone products to the value of \$1,170,545.83, lacking only the sum of \$113,661.17 of being the value of the entire exports of the province as reported by the revenue department of the province. There are, also, other difficulties in the way of ascertaining the country from which goods are imported; a large per cent. of imports are marked at Rio de Janeiro "foreign goods in transit," and are so entered at the custom-house here. Then, by indirect transportation, countries are not properly credited; for instance, the official figures in the custom-house of this city show that from July 1, 1885, to June 30, 1886, there was imported kerosene or petroleum and gasoline, from Uruguay, to the amount of \$8,012, and for the same time, from the United States, to the amount of \$2,859.50. The fact is that it all came from the United States, though the greater part came through an Uruguayan exporter, and so was entered as an export of that country.

Wheat flour is the chief article of American imports in the province, and it has lately found a very formidable rival in the markets here in the flour imported from Uruguay and the Argentine Republic. In former years wheat was extensively cultivated in this province, but on account of some failures of crops from blight wheat raising has been abandoned. Parts of the country are remarkably well adapted to its growth, the yield being equal to that of the best wheat-growing sections of the world, but the great drawback to its culture now, as in former years, is the lack of milling machinery throughout the province. However, a new mill has been started in Pelotas, grinding wheat from the Rio Plata at the rate of 1,000 tons per annum. The best quality of this flour brings \$7 per barrel, best brand of American flour \$8 per barrel, and the best brand of Rio Plata \$7.25 per barrel.

The superiority of the American flour is well known and commands a higher price in the market. I am not prepared to say that the United States flour exported will lose any trade under the change of circumstances, but am fearful that it will not increase as it should with the natural increase of demand for flour. It must be admitted that the Rio Plata exporter can put a barrel of flour on the wharf at Rio Grande for one-third the cost to bring it from the United States, and much fresher from the mills. The importation of flour in barrels has increased over 25,000 barrels in this province since 1885. The total importation is now not less than 100,000 barrels, of which 37,000, consigned to a large importer of this city, are received from the Rio Plata. To show the relative importations of flour, there was dispatched from the custom-house of Rio Grande alone, from July 1, 1885, to June 30, 1886, 36,019 barrels from the United States, 15,121 from Uruguay and Argentine, and 9,217 from all other countries. The Rio Plata flour has not only found a market in this province, but at the present time has a fair quotation in Rio de Janeiro, and is

There are a few other articles of American manufacture which, by their superiority of make and quality, have established a reputation and demand which remains unshaken by the cheap and worthless imitations from Europe, such as novelties, dental instruments, axes, lamps, etc. There should be a sale here for American furniture and pianos, but the great difficulty about the introduction of American goods is that there are no American merchants here, and as a consequence no American goods are sold except those that compel their purchase by reason of their adaptation to the wants of the people and excellent qualities.

The necessity for an extensive foreign trade has not yet arisen in the United States, for which every man who is an operative should be thankful. If that necessity were at hand how could the United States compete in these markets with the fabrics of France, Germany, and England where labor is so poorly paid.

The leading importers here are English and German houses, which are, in most instances, branches of principal houses in Europe and England. It is nothing more than natural that they should endeavor to increase the demand for the goods of their respective countries. The German merchant has pushed wonderfully fast, coming from third or fourth place a few years ago to very likely first now with his imports.

To establish a trade in American goods here I should be at loss to suggest a place that would succeed. I am confident that drummers would do but little good unless a very large line of samples was carried; then, again, I do not think he would succeed, because the drummer would be absent, in all probability, when the order arrived, and the least discrepancy would be an occasion of much complaint. As a rule the average Brazilian merchant does not believe much in anything unless he has an ocular demonstration of the fact; he wants to see what he buys, and, by the way, the rule is not a bad one. I am of opinion that the suggestions of H. Clay Armstrong, United States Consul-General at Rio de Janeiro, contained in his report, which was published in No. 82 of the CONSULAR REPORTS, offer the best solution of the question, "how to establish," when it is desired to establish American trade. His suggestions were that exporters, manufacturers, or any others who desired, should establish an information bureau, stocking it with a full line of samples, requiring the agent to give such information as would be of value in trade, and to fill orders from the samples on hand. Until the way was made for a permanent sale of American goods, by that or similar methods, I would deem an investment in goods for trade in this country a bad one. To establish a house here without a knowledge of the wants of the people, their languages and business methods, would involve great loss undoubtedly.

Shipping returns of the harbor of Rio Grande do Sul for the year 1885.

Nationality.	Sailing.		Steamers.		Total.	
	No.	Tons.	No.	Tons.	No.	Tons.
British	108	17,938	37	14,784	145	32,722
Brazilian	124	18,600	130	50,972	254	69,572
Dutch ...	63	10,359	.....	.....	63	10,359
German	66	9,171	.....	.....	66	9,171
Danish.....	51	7,522	.....	.....	51	7,522
Norwegian	43	6,892	.....	.....	43	6,892
Portuguese.....	19	4,357	.....	.....	19	4,357
United States.....	8	2,056	.....	.....	8	2,056
Other nations.....	32	4,984	.....	.....	32	4,984
Total.....	514	81,879	167	65,756	681	147,635

Shipping returns of the harbor of Rio Grande do Sul for the year 1886.

Nationality.	Sailing.		Steamers.		Total.	
	No.	Tons.	No.	Tons.	No.	Tons.
British	59	10,609	39	15,834	98	26,503
Brazilian	120	21,712	108	41,950	228	63,662
Dutch.....	43	7,279	.....	.....	43	7,279
German	52	7,864	.....	.....	52	7,864
Danish.....	53	7,746	.....	.....	53	7,746
Norwegian	57	11,376	.....	.....	57	11,376
United States.....	1	268	.....	.....	1	268
Other nations.....	49	9,595	.....	.....	49	9,595
Total.....	434	56,509	147	57,784	581	114,293

In the year 1887 the number of vessels of all classes and nationalities entering the harbor of Rio Grande do Sul was 534, of which four were under the flag of the United States, having an aggregate of 999 tons. Cargoes were flour and railroad supplies.

The following shows the imports into Rio Grande do Sul during 1886:

Cotton goods.....	\$582,411.72
Flour	379,207.52
Wines and liquors.....	446,622.24
Woolen goods.....	296,696.52
Coffee	40,617.44
Sugar.....	503,009.64
Iron and steel.....	152,926.28
Skins and leather	91,974.52
Linen goods.....	50,689.32
Tobacco.....	20,637.76
Other articles	952,206.52
Total	3,516,999.48

The following statement shows the exports from Rio Grande do Sul during the year 1886:

	Number.	Tons.
Salted hides *	362,778	.....
Dry hides	395,744	.....
Horse-hides.....	29,128	.....
Horse-hair.....		646
Wool		1,101
Bone-ash		6,230
Tallow (hard).....		2,254
Tallow (soft).....		1,600
Horns	1,031,957	.....
Dried beef.....		22,362
Calcined bones.....		150
Artificial guano.....		270
Artificial phosphate		875

The following shows the value of imports at Rio Grande do Sul by countries during 1886:

Brazil.....	\$790,357.64
England	696,374.36
Germany	691,268.16
Italy.....	50,248.88
United States.....	125,427.84
France	261,848.84
Uruguay.....	303,226.00
Other countries †.....	608,144.76
Total	3,516,999.48

The imports from the United States for the last six months of 1885 amounted to \$95,353.

The following shows the number and nationality of vessels cleared from Rio Grande do Sul for the United States during the years 1886 and 1887:

	1886.	1887.
Danish.....	1	3
British	2	1
Norwegian	3	5
Dutch	5	3
Swedish.....	3	4
German	2	1
Portuguese	1	1
Total.....	—	—
	17	18

Manufacture in this province is not extensive, there are but two establishments worthy of the name of factory, the woollen and the first started

in 1874, and the latter in 1880. The woolen used in the factory is the product of this province, and the cotton comes from Pernambuco. The machinery is of the latest and most improved kind, and the work is superintended by men who have had much experience in Europe. The machinery is driven by three engines of 190 horse-power. Four hundred operatives are employed, of whom 60 per cent. are Brazilians, 15 per cent. Portuguese, 10 per cent. Italians, and 15 per cent. of other nationalities, and the wages paid them amount to \$100,000 per annum.

Flannels, cloths, cassimeres, and blankets of the best quality are manufactured, and for a very reasonable price. The total value of the woolen goods turned out per annum is \$270,000, total value of cotton goods \$97,675 per annum.

In connection with this factory is a school which all children of the operatives must attend a certain number of hours each day after they have arrived at a certain age; there is also a free club-room, music hall, billiard room, and a small library, and all the operatives have free medical attendance.

The woolen mill was the first in the Empire, and has the contract for the manufacture of cloth for the army.

Taking the mills as a whole the business is well conducted, and its productions will compare favorably with those of other sections of the world, and their existence and successful operations reflect great credit upon the energetic Brazilians of Rio Grande do Sul, who built them as an experiment a few years ago to ascertain if the wool of this country could not be profitably manufactured at home. — RIO GRANDE DO SUL, *July 19, 1888.*

LEBBEUS G. BENNINGTON,

Consul.

EMIGRATION LAW OF SWITZERLAND.

FEDERAL LAW CONCERNING THE OPERATIONS OF EMIGRATION AGENCIES.

The Federal Assembly of the Swiss Confederation in execution of article 34, section 2, of the federal constitution and in revision of the federal law of December 24, 1880, decrees:

ARTICLE 1. The supervision of the operations of emigration agencies, provided in article 34, section 2, of the federal constitution, is exercised by the Federal Council with the concurrence of the cantonal authorities.

It will be the particular duty of the latter (*a*) first to examine if the conditions which article 3 of the law granting a license or the approval of the nomination of subagents prescribes are complied with by the agents or subagents; (*b*) to pronounce penalties in cases, where not observed, according to their competence, under articles 18 and 19 of the present law.

ART. 2. Whoever wishes to engage in professional transportation of emigrants or sale of passage tickets, must procure a license for that purpose, issued by the Federal Council. If the emigration agency is constituted in form of a society, the corporation act, or a certified copy

ART. 3. Licenses can only be granted to such agents or representatives of emigration agencies who can prove:

- (1) That they enjoy a good reputation and their civil and political rights.
- (2) That they are acquainted with the emigration operations and are enabled to ship emigrants safely.
- (3) That they have a regular domicile in Switzerland. The fee for a license shall be 50 francs.

The Federal Council is authorized to withdraw a license if the holder does not comply with the conditions provided in the present article (sections 1 to 3), or proves himself guilty of grave and repeated offenses against the prescriptions of the présent law (article 18), or participates in a colonization enterprise which the Federal Council has denounced. The agent surrendering his license must make a declaration to that effect to the Federal Council and return the license.

Agents or their subagents can not be in service of a maritime company or transatlantic railroad company, nor associated with such a company.

ART. 4. Each emigration agency on receipt of its license must deposit with the confederation a security of 40,000 francs. For each subagent the agencies have to deposit a further security of 3,000 francs. Persons wishing to engage professionally in the sale of passage tickets must deposit a security of 20,000 francs. The security shall consist of federal or cantonal bonds (obligations) or other valuable securities.

If the value of the security deposited should diminish from any cause whatever the agency must promptly make it good, and, failing to do so, the Federal Council can withdraw the license of said agency. The security can not be returned before the lapse of one year after annulling the license. If at that time reclamations exist against the agent a corresponding amount will be retained until the adjustment of the same. The reimbursement of security to be furnished, according to the number of subagents, will take place each year in proportion to the diminution of this number.

The security serves as a guaranty for reclamations by authorities or emigrants or their assigns which could be brought according to the law.

ART. 5. It is permitted to agents to be represented by subagents. These have to comply with the conditions provided in article 3, sections 1, 2, and 3 for the agents. Their nomination is submitted to the Federal Council for approval; notice thereof shall be given to the competent authority of the canton in which they are domiciled.

For the approval of each subagent and for each modification in the personnel of the agency a fee, determined by the Federal Council, is to be paid.

The Federal Council has the right to withdraw the functions of a subagent if he give cause of well-founded complaints, and in this case he shall be immediately dismissed.

Business relations with emigrants can only take place through the intervention of agents or subagents.

ART. 6. Agents and subagents can not be officers or employés of the Confederation.

ART. 7. Agents are personally responsible to the authorities, as well as to the emigrants, for their proper conduct and for that of their subagents, as well as of their representatives in foreign countries.

ART. 8. The names of licensed agents and the representatives of recognized societies as well as their subagents are to be published in the "Feuille fédérale" immediately after having their names officially inscribed. No persons whose names are not published are relating to the shipment of emigrants.

at any time the registers and all the books and accounts of the agents and subagents. Agents and subagents shall furnish to the police authorities all the information requested by them for the search of criminals.

ART. 10. Persons, societies, or agencies who are the representatives under any title of a colonization enterprise must inform the Federal Council, and furnish it with complete information of the same. The Federal Council is competent in each particular case to decide if, and under what conditions, permission can be granted to private persons, societies, or agencies to represent a colonization enterprise.

ART. 11. It is prohibited to agents to ship:

(1) Persons who, on account of advanced age, sickness, or infirmity, are unable to work, unless it be proven that sufficient support is assured to them at the place of destination.

(2) Minors or persons under guardianship without a written consent duly legalized from the paternal authority or guardian. Minors under sixteen years of age shall besides be accompanied by competent persons, and proof shall be furnished that their support is assured at their destination.

(3) Persons who, after having paid their passage, would arrive at the place of destination without means.

(4) Persons to whom the law of the country of destination prohibits entry.

(5) Persons not provided with papers establishing their origin and nationality.

(6) Swiss citizens liable to military service who have not proved the surrender to the canton of their military effects.

(7) Parents who, without consent of the competent authority, propose to leave their uneducated children in Switzerland. Before conclusion of the contract the proofs required in sections 2, 5, 6, and 7 of the present article shall be produced to the agencies.

ART. 12. It is prohibited to agencies as well as to colonization societies to conclude contracts according to which they engage themselves to ship a certain number of persons, be it to a transport society, to a colonization enterprise or other, or to a foreign government.

ART. 13. Contracts and undertakings of any nature containing provisions contrary to articles 11 and 12 are void and punishable.

ART. 14. Agents receiving money on deposit shall take care that the same be paid in cash on arrival of the emigrant at the place of destination without any deduction and in currency corresponding in value to that paid to the agent in Switzerland.

ART. 15. The obligations of the agent towards the emigrant comprehend in all cases:

(1) Sure expedition of persons and their baggage to the place of destination indicated in the contract at a determined price fixed in the contract, and which can not be augmented in no case and in any manner under reserve of sections 5 and 6 following. No separate charges can be demanded for the transport from the steamer to the final landing place.

(2) Sufficient, healthy, and clean nourishment and lodging during the whole journey, except in case the emigrant wishes to find his own support en route to the seaport.

(3) Free medical treatment in case of sickness.

(4) Conventional burial in case of death during the journey.

(5) Insurance of baggage against loss or damage according to a tariff indicated in the contract and submitted for approval to the Federal Council.

(6) Insurance in case of accident of the head of the family, or, in absence of any such, of the one so acting during the voyage to the place of destination designated in the contract, for the sum of 500 francs. The premium shall also be indicated in the contract and the tariff submitted to the Federal Council for approval.

(7) Complete maintenance (nourishment and lodging) in case of stopping or delay during the voyage when without fault of the emigrant, and in case the contracted means of transport should fail or be insufficient, then the prompt transport to the place of destination shall be assured.

ART. 16. The following prescriptions shall be observed for the transportation of emigrants:

- (1) The transportation by railway shall take place in passenger cars, and each person entitled to a seat, in conformity with the transport regulations. Admittance in ordinary waiting rooms shall be as far as possible accorded to emigrants at stations where there is a delay.
- (2) The transportation on sea can only take place on steamers of the company designated in the contract. These steamers for the transportation of emigrants shall be provided with permanent subdivisions enabling the separation of the sexes, and there shall be a physician on board. They shall be subjected at the place of embarking to the control of the police.
- (3) In no case the emigrant shall have to pay any fee whatsoever beyond the price fixed in the contract.

(4) The passage price can not consist in whole or in part in personal service.

(5) It is prohibited to the emigrant to supply himself with food during the sea voyage, and the same shall be furnished him in good quality and completely prepared.

(6) All emigration bodies across the sea, which are not accompanied by an agent or sub-agent, shall be received at intermediate stations or at port of embarking by a representative of the agency. The person accompanying the emigrants shall not leave them until the departure of the steamer. The agents shall see that the respective consuls are advised of the embarking and landing of emigrants and that the latter are received at the ports by a representative of the agency. If the agent does not comply with the prescriptions of articles 15 and 16 the emigrant is entitled to cancel the contract and sue the agent for damages.

ART. 17. Emigration contracts shall be made in writing and in duplicates, one for the emigrant and the other for the agent. The contract shall contain:

(1) Name and Christian name, date of birth, origin and domicile of emigrant, as well as the route of voyage and the place of destination to which the agent has obligated himself to ship the emigrant.

(2) The exact fixing of the departure, as well as in case of sea transport, the place and day of the departure of the vessel.

(3) The indication of the place on the vessel to which the emigrant is entitled and also for his family and baggage.

(4) The exact indication, in letters and ciphers, of the price of transportation and the insurance of persons and baggage. The price of an inland ticket shall be specially noted in the contract.

(5) The textual reproduction of articles 15, 16, 21, 22, and 23 of the present law.

(6) The provision that in case of proven sickness or other hinderance of not his fault the emigrant can not pursue his route or continue his voyage the agent is obliged to refund the sums paid for transportation less the expenses incurred by the conclusion or partial execution of the contract. The duplicate of the emigration contract in hands of the emigrant shall not be claimed from him under any pretext. The Federal Council issues an obligatory form for the drawing up of emigration contracts.

ART. 18. Agents infringing the present law, or their subagents or representatives in Switzerland or in foreign countries doing so, are liable to a fine of from 20 francs to 1,000 francs, enforced by the Federal Council without prejudice to action for damages which may be brought. If the circumstances are grave the license is withdrawn and the agents, subagents, or representatives found guilty are liable to imprisonment according to article 19, to be passed upon by the cantonal tribunals.

ART. 19. Persons and their accomplices who, without license or authorization, engage with the sale of passage tickets, participate in colonization (section 1),

within one year from the date the injured party had knowledge of the damage. The judge shall inform the Federal Council of the beginning of the action as soon as taken (article 4, section 5). The competent cantonal authorities shall give notice to the Federal Council of the judgment rendered in virtue of articles 18, 19, and 21 of the law.

ART. 22. The Swiss consuls at seaports are charged with the examination free of cost of all reclamations which Swiss emigrants are claiming on the non-execution of their contracts, if presented within ninety-six hours after their arrival. With request of a party interested, a protocol of the reclamation shall be taken and a copy thereof sent to the Federal Council. The Federal Council is charged to adopt the necessary measures within the limit of the power it has that Swiss emigrants may receive assistance and advice at the principal ports of embarking and landing.

ART. 23. A protocol made in a foreign country according to the law by a Swiss consul, an emigration commissioner, or by any other competent person, shall merit full faith under reserve of contrary proofs.

ART. 24. The Federal Council enacts the necessary regulations for the execution of this law. It has the right to prohibit: Advertisements in public newspapers or other publications of any nature intended to mislead persons desiring to emigrate. The employment of transport conveyance not agreeing with the prescriptions of this law, or which would give cause to well-founded complaints.

ART. 25. The supervision of the Federal Council over emigration operations and the control of the execution of the present law shall be exercised by the department charged therewith by the Federal Council. For this purpose a special bureau will be attached to the department charged to keep up communication with the respective departments in other countries and to give, if requested, to persons wishing to emigrate, the necessary information, advice, and recommendations. The Federal Council can, within the limits of the budget, order special missions for the protection of emigrants and colonists.

ART. 26. The federal law concerning the operation of emigration agencies of December 24, 1880, as well as all the cantonal enactments of laws and ordinances contrary to this law, are repealed from the time of its going into effect. In particular, no canton can further claim of emigration agents or their subagents or emigrants a security or any tax whatsoever beyond the ordinary imports and duties.

ART. 27. The Federal Council is charged in conformity with the provision of the federal law of June 17, 1874, concerning the popular vote on federal laws and decrees, to publish this law and fix the time when it shall go into force. Also decreed by the Council of States.

BERNE, *March 20, 1888.*

The President: A. GAVARD.

The Secretary: SCHATZMANN.

Also decreed by the National Council.

BERNE, *March 22, 1888.*

The President: KURZ.

The Secretary: RINGIER.

The Federal Council decreed:

The foregoing federal law, published April 7, 1888, will go into force in virtue of article 89, of the federal constitution, and in execution on July 10, 1888.

BERNE, *July 10, 1888.*

In the name of the Swiss Federal Council.

For the President of the Confederation: SCHENK.

The Chancellor of the Confederation: RINGIER.

Resolved:

ARTICLE 1. The supervision of the Federal Council over the emigration agents and the control of the execution of the federal law concerning the operation of emigration agencies shall be exercised by the department of foreign affairs.

ART. 2. The cantons shall designate to the Federal Council those authorities, in conformity with article 1, section 1, of the law, which are to be charged with the supervision of the agents and subagents domiciled in their district.

ART. 3. License issued under the federal law of December 24, 1880, concerning the operation of emigration agencies is valid until August 31, 1888.

ART. 4. Persons who wish to engage in the professional transportation of emigrants or the sale of passage tickets must apply for a license to the department of foreign affairs. Under passage tickets or ship contracts is understood the right of a sea voyage from a European port of embarking to the transatlantic port of disembarking.

ART. 5. Societies wishing to exercise the business of emigration agents or the sale of passage tickets must submit, with the application for a license, their corporate contract or a certified copy thereof, and to indicate the name of their representative.

ART. 6. Applicant for license must prove:

- (a) That he enjoys a good reputation and his civil and political rights.
- (b) That he is acquainted with the operation of emigration and is able to manage the safe transportation of emigrants.

(c) That he has a regular domicile in Switzerland. The department of foreign affairs can, in place of the proof asked in section B, subject the applicant to a personal examination. Persons demanding a license must declare that they are not in the employment or associated with any transatlantic company, maritime, or railway company. Emigration licenses not to be furnished to foreigners except under condition that the law of their original domicile does not prohibit to foreigners the right of immigration.

ART. 7. Those persons or societies who are engaged in the professional sale of passage tickets can continue their operation without license until August 31, 1888. But during this time they are subject to those provisions of the federal law of March 22, 1888, concerning the operation of emigration agencies which do not refer to the delivery of license. After September 1, 1888, no person or society can engage in the professional transportation of emigrants or the sale of passage tickets without having secured a license. If, through fault of the applicant, the demand for a license has not been granted before September 1, 1888, the right to pursue the business will be prohibited to him until he has received his license.

ART. 8. The department of foreign affairs will notify the cantons of license applications. The cantonal competent authorities must show that the conditions required by law for issuing a license have been complied with by the applicants and that the latter, if circumstances require, may be subjected to an examination.

ART. 9. The annual fee for license shall be 50 francs. This fee will be proportionately reduced if the license is not delivered at the beginning of the year. It is to be paid the first time on the receipt of the license and afterwards during the month of January.

ART. 10. The license gives to the agent the right to make their business of emigration throughout the entire territory of Switzerland, but the agents are obliged to bring to the knowledge of the department of foreign affairs their selected domicile and of each change thereof.

It is prohibited to agents and subagents to mislead emigrants or to solicit emi-

(c) If the same participate in any enterprise of colonization which the Federal Council has denounced.

(d) If the security fixed in article 28 is not furnished within the prescribed time.

ART. 14. The agent wishing to surrender his license must make the declaration to the Federal Council and return his license.

SUBAGENTS.

ART. 15. Agents are permitted to be represented by subagents, whose nomination is confirmed by the Federal Council.

ART. 16. The agencies have to furnish to the department of foreign affairs exact data of the name, occupation, and domicile of the subagents whom they propose to employ. Subagents whose nominations are announced to the Federal Council, but not yet confirmed, can not enter upon their duties.

ART. 17. The confirmation of the nomination of a subagent will take place:

(a) When proof is furnished that he meets the same requirements as an agent (article 6).

(b) If the information requested from the cantonal authority, in conformity with article 1 of the law, is favorable.

ART. 18. Officers and employés of the Confederation can not themselves engage in emigration operations.

ART. 19. The confirmation of subagents will take place twice a year. In the interval the department of foreign affairs can approve, under reserve of the definite decision of the Federal Council, the nomination of a subagent. In this case the respective fee is to be paid by the provisional nominee.

ART. 20. It is prohibited to agents to employ for emigration operations persons whose nomination is not confirmed by the Federal Council. It is also prohibited to engage subagents of other firms, as well as emissaries.

ART. 21. Subagents can not, without being authorized by the department of foreign affairs, engage in emigration operations in any other locality than the domicile indicated in the application.

ART. 22. The Federal Council can withdraw the confirmation of the nomination of a subagent:

(a) If he fails to comply with the legal provisions (article 6).

(b) If he gives cause to complaints submitted.

(c) If he engage in emigration operations on his own account.

(d) If he seeks to produce emigration by traveling through the country. In cases where the Federal Council finds it necessary to withdraw the authorization of the further employment of a subagent the same is immediately to be discharged. The department of foreign affairs will decide if a dismissed subagent can be re-employed, or if a subagent can be transferred from one agency to another.

ART. 23. The agents shall pay the following fees for the confirmation of the nomination of subagents and for the changes made:

(a) For the approval of the nomination of a subagent, re-employment of a dismissed subagent, or the transfer of a subagent from one agency to the other, for each case 30 francs.

(b) For publication of change of domicile, the dismissal or revocation of subagents, 5 francs. In case of death of a subagent no fee is to be paid for the publication. These fees, as well as the one prescribed in article 9, are to be paid, even if for any cause the renunciation of the license is made before the holder has opened his office, or, in event of the confirmation, a subagent does not enter upon his duties.

SECURITIES.

security of persons or societies who engage only in the sale of passage tickets (article 4) shall be 20,000 francs. The agencies must furnish besides a security of 3,000 francs for each sub-agent whose nomination is approved.

ART. 25. The securities shall consist in federal or cantonal bonds (obligations), or in other valuable securities.

ART. 26. Before transmitting the security, a list of them, which the agent or the society wishes to deposit, shall be sent to the department of foreign affairs, which, after advice from the federal department of finance, will decide on their acceptance and value.

ART. 27. The securities shall be deposited with the federal treasury, through the federal department of foreign affairs. The security shall be subjected to the provisions of the pawn contract (article 210 and following of the obligation code).

ART. 28. A delay of fourteen days is accorded to the agent from date of delivery of license or from the approval of the nomination of a subagent. The department of foreign affairs can exceptionally grant a delay of one month.

ART. 29. The security serves as a guaranty for reclamations by authorities or emigrants, or their assigns, which could be brought according to law. If the value of the security deposited should diminish from any cause whatsoever the depositor must immediately make it good.

ART. 30. The costs resulting from keeping the securities, the delivery of the coupons, change, transmission of documents, etc., are to be charged against the depositor. The maturing coupons of the deposited securities are to be delivered in advance, at the end of the year for the following year, to the depositor. Measures to be taken in case of drawings, of declarations of conversion, expiration of loans and the payment of interests are left to charge of the person furnishing the security. In such cases the delivery of the whole or part of the security will only take place when the agent has deposited the equivalent of the value surrendered.

ART. 31. For employés who are exclusively occupied in the office of the principal agency (as correspondents, cashiers, book-keepers, and servants) no security or fee has to be furnished. These employés, if they are not at the same time subagents, have not the right to sign emigration contracts; if they exercise other functions it will be in contravention of article 5, last section of the law, and accordingly punished.

ART. 32. The security of 40,000 or of 20,000 francs can not be returned before one year after the annulling of the license. If at that time reclamations exist against the agent a corresponding amount will be retained until the same is adjusted. The department of foreign affairs will publish, in the *Feuille Fédérale* and *Feuille Officielle du Commerce*, the time during which claims against the security can be presented.

ART. 33. The reimbursement of security, to be furnished according to the number of subagents, will take place one year after the dismissal of a subagent.

GENERAL AND FINAL PROVISIONS.

ART. 34. The department of foreign affairs, as well as the cantonal officers charged with supervision of emigration operations, article 2, shall keep an exact and continuous register in which are inscribed the names of the licensed agents, the representatives of recognized societies, persons authorized to sell passage tickets, and their subagents. These names shall be published in the *Feuille Fédérale* immediately after delivery of the license or the approval of the subagents. In annual tables the list of persons authorized to transport emigrants will be published.

The cantons shall distribute in a sufficient manner these publications to their
inscribed in the agents' lists

ART. 36. The agents are personally responsible to the authorities as well as to emigrants for their own management and of their subagents, as well as of their representatives in foreign countries.

ART. 37. Agents and subagents shall keep a bound and paged register, according to a form prescribed by the department of foreign affairs, of the emigration contracts they make. The press copying books used for their correspondence shall also be bound and paged.

ART. 38. The department of foreign affairs may subject, from time to time, to an inspection the registers, books, and other records of the agents and subagents. The agents and subagents shall freely permit the officers of federal bureau of emigration, as well as the cantonal authorities, to inspect their registers, books, and records.

ART. 39. The agents shall communicate to the department of foreign affairs:

(1) The list of persons transported by them—the forms for this list are furnished free of charge to the agents, and are to be sent monthly duly filled out.

(2) A price-list of all the routes by which emigrants are shipped, separately designating sea journey to the landing port and the tickets for the interior.

(3) The names of their representatives and attorneys at the port of embarking and landing.

(4) The tariff according to which, in execution of article 15, sections 5 and 6 of the law, the insurance of the baggage of the emigrant and of the chief of the family or its representative is regulated.

(5) A list of the amount of money which is delivered to the agent and which, according to article 14 of the law, is to be paid to the emigrant at the place of destination.

This list shall contain:

(a) The sum turned over in Swiss value.

(b) The sum turned over in value of place of destination.

(c) The exact designation of the emigrant.

(d) The exact designation of the person or bureau which has to make the payment.

The Federal Council can prohibit to agents the sale of inland tickets.

ART. 40. The agents shall give notice in due time to the Swiss consuls at the ports of embarking and landing of the arrival of emigrants and provide that the latter will be received by a representative of the agency there.

ART. 41. The department of foreign affairs is charged with the execution of this law. —
BERNE, *July 10, 1888.*

In the name of the Swiss Federal Council, for the President of the Confederation,
SCHENK.

The Chancellor of the Confederation,

RINGIER.

CABLE CONCESSION IN HAWAII.

AN ACT TO AUTHORIZE THE HAWAIIAN GOVERNMENT TO CONTRACT FOR THE CONSTRUCTION OF INTER-ISLAND SUBMARINE ELECTRIC TELEGRAPH CABLES.

Be it enacted by the King and the Legislature of the Hawaiian Kingdom:

SECTION 1. The minister of the interior, with the unanimous concurrence of the cabinet, is hereby authorized to enter into a contract with J. Sherman Bartholomew, residing in Honolulu, Hawaiian Islands, his associates and assigns, or with any other persons or corporation, for the construction, laying, or maintaining of a submarine electric telegraph cable or cables to connect the islands of the Hawaiian group from Hawaii to Kauai, as follows, to wit:

SEC. 2. Such contract may, by its terms, provide for the grant, concession, and confirmation by the Hawaiian Government to the said J. Sherman Bartholomew, his associates and assigns, or any other persons or corporation (hereinafter named and referred to as the constructors), of the sole and exclusive right and privilege to construct and lay submarine electric telegraph cables to connect the islands of the Hawaiian group from Hawaii to Kauai, by way of Maui, Molokai, and Oahu, together with lines of land telegraph, to connect the same for and during a period not to exceed ten years from the 1st day of January, A. D. 1889: Provided, however, that if the same lines of submarine electric telegraph cable shall not be laid ready for use on or before the 1st day of July, 1889, then the exclusive right and privilege, the granting of which is hereinbefore authorized, shall, at the option of the cabinet, at once or at any time thereafter, lapse and become void upon three months' notice to that effect being given to the constructors; and provided, also, that if any of the lines of land telegraph, to connect with the said submarine cables, shall not be constructed and ready for operation on or before the 1st day of January, A. D. 1891, then or at any time thereafter, upon three months' notice to the constructors, the minister of the interior, with the approval of the cabinet, may declare the exclusive right and privilege granted for the construction and maintaining of any such land line to be void and forfeited, and such exclusive right and privilege shall thereupon be void; and provided, also, that the rights and privileges granted by virtue of this act shall not operate to prevent or preclude the Hawaiian Government from consenting to the landing, laying, or maintaining upon the Hawaiian Islands, or any of said islands, or in any Hawaiian waters, of any submarine telegraph or other electric cable or cables which shall serve to connect the said islands, or any of them, with any foreign country, or to interfere with the vested rights of any existing Hawaiian telephone or telegraph corporation.

SEC. 3. Such contract may further provide for the payment by the Hawaiian Government to the said constructors of the sum of \$25,000 in the manner following, that is to say: Upon the completion of the said line in good working condition between Oahu and Maui, the sum of \$8,000; upon the completion of the said line in good working condition between Oahu and Hawaii, \$8,000, and upon the completion of the said line in good working condition between Oahu and Kauai, \$9,000.

SEC. 4. The granting of any of the rights or privileges, and the payment of any of the money authorized by this act, shall be conditioned upon the following additional covenants, that is to say: All messages other than Hawaiian Government messages or press messages shall be received and transmitted over any or all of said lines at the rate of not more than 10 cents for each word, and all messages to or from the Hawaiian Government, or any officer thereof in his official capacity, and all press messages shall be received and transmitted over said lines for one-half of the rates charged for messages other than the Hawaiian Government messages or press messages.

SEC. 5. Upon proof satisfactory to the minister of the interior that the respective sections of said line, as set forth in section 3 of this act, have been completed and are in good working condition for the transmission of messages, the said minister is hereby authorized and directed to pay to the said constructors the respective sums of money as provided in said section 3.

SEC. 6. This act shall take effect from and after the date of its approval.

Approved this 2d day of July, 1888.

KALAKAUA REX.

By the King:

L. A. THURSTON,

Minister of the Interior.

PORT AND BAY OF BAHIA BLANCA.

Within the last few years the attention of the public has been very generally directed to the growing importance of the port of Bahia Blanca, or White Bay, which is located on the Atlantic coast in the extreme southeastern corner of the province of Buenos Ayres. Very great things are predicted of its future. The newspapers already have named it the "future Liverpool" of the Argentine Republic. The principal reason for these predictions is the fact that it is the only natural harbor on the entire Argentine coast, north of Patagonia, where sea-going vessels can at all times ride at anchor beyond the reach of the storms, which at some seasons of the year are so prevalent along the southern Atlantic; at the same time that the bay has always sufficient water for the largest class of vessels, with excellent holding ground throughout its whole extent.

HISTORY OF BAHIA BLANCA.

The town of Bahia Blanca is about 6 miles back from the port, the intervening distance being low and swampy. Its history dates back to 1826, at which time a fort was established there to protect the frontier from the ravages of the Indians. In 1833, under the auspices of the Dictator Rosas, the town was laid out, various houses were built, and a regular mail service by diligence was established with Buenos Ayres. For a few years there was quite an influx of settlers, not only to the town but to the adjacent country. Soon a number of *estancias* were started, and all that corner of the province, with its rich grasses, was quite covered with cattle and horses. But with the fall of Rosas, in 1852, the fort was quite abandoned, and the Indians again coming in, spread ruin and desolation by burning the *ranchos*, killing the settlers, carrying off their stock, and even committing their depredations in the very center of the town, so that the neighborhood was again occupied by ostriches and guanacos. No effort was made to re-establish the *estancias* until 1863, when the Indians having been driven from all that vicinity, some fine establishments were built along the valley of the Napostá River, well stocked with cattle and horses. About the same time a number of large sheep *estancias* were started. Among others who settled there was Captain Arnold, an old ship-master from the United States, who, in 1865, secured lands and stocked them with sheep.

The town has grown in importance since the Buenos Ayres and Great Southern Railway was (in 1884) extended to the town and port. In 1885 an extensive mole and port works, under a concession from the province, was completed by the railway company and opened to the public. The port has now all the modern appliances for handling cargoes with

PRESENT CONDITION OF THE TOWN AND COUNTY.

The *partido* (county) of Bahia Blanca contains about 228 square leagues. The town itself has an extent of about 160 acres, adjoining which are small farms for crops, orchards, vineyards, etc., embracing together about 1,000 acres, while about 1,233,870 acres are devoted to cattle *estancias* and sheep runs. The total population of the county is 3,200, of which 2,213 are natives and 988 foreigners. In 1886 it contained 45,955 horned cattle, 17,645 horses, 309,238 sheep, 852 hogs, 343 goats, and 323 ostriches. It has 40 industrial establishments, employing 130 persons, with an invested capital of \$182,000; and 55 commercial houses, employing 138 persons, with an invested capital of \$400,000. Its other assessments are as follows: Lands, \$1,985,152; buildings, \$565,000; vines and orchards, \$31,090; agricultural implements, \$1,064; cattle, sheep, and horses, \$1,637,012, etc. The total assessed wealth amounts to \$4,458,723. The town itself contains 639 houses, 1 church, 2 schools, 1 newspaper, 1 public library, 1 bank (a branch of the Provincial), 2 steam mills, 7 hotels, 94 shops, etc.

So many fresh-water streams flow from the Sierras Ventana, a chain of high hills in the northern part of the *partido*, that the country is nearly always well watered. Although it is plain or pampa along the banks of the rivers Sauce Grande, Sauce Chico, and Neportá there is considerable timber, chiefly the red willow. The climate is mild, and snow seldom falls. According to the observations taken at Bahia Blanca for the last twenty years, the following are the meteorological figures:

Temperature (Fahrenheit).	Spring.	Summer.	Autumn.	Winter.
Mean.....	60°	74°	60°	48°
Maximum.....	95°	101°	93°	73°
Minimum.....	32°	46°	46°	26°

The rainfall averages 6 inches in spring, 5 inches in summer, 6 inches in autumn, and 3 inches in winter, total for the year 20 inches.

THE BAY OF BAHIA BLANCA.

The bay or estuary of Bahia Blanca, for the purposes of navigation and commerce, is very advantageously situated. It is located in 38° 44' south latitude, and is 3° 50' west of the longitude of Buenos Ayres. It is 36 miles in length and is 15 miles wide at its entrance, which is divided into three great channels, with sufficient depth of water for vessels of the largest size and greatest draught. Throughout its great extent there is everywhere splendid anchorage, the depth varying from 12 to 60 feet at low water. The channels, however, which lead up to the port are in some parts tortuous and have been dangerous to navigation in

directly on Point Hermosa. It stands 168 feet above the sea-level and displays a white light. It is visible for a distance of 10 miles at night and 15 miles during the day, thus giving every facility for approaching safely the entrance of the bay.

NAVIGATION STATISTICS.

The completion of the Buenos Ayres and Great Southern Railway to Bahia Blanca, a distance of 444 miles, has reduced the time between the two places to eighteen hours, and the business of Bahia Blanca has been greatly increased. But besides this there is now regular steamer communication between the two places, the passage being made in about thirty-six hours.

The arrivals and departures of vessels in this coasting trade during the year 1887 were as follows, viz, 30 arrivals of steamers with a tonnage of 9,047 tons; 39 departures with a tonnage of 13,643 tons; arrivals of sailing vessels, 12; tonnage, 2,478; departure of sailing vessels, 20; tonnage, 4,354. In the foreign trade there were 17 arrivals with 7,157 tonnage, and 10 departures with 4,205 tonnage. The nationality of the vessels arriving was as follows: 8 British, 4 German, 2 Italian, 1 American, 1 Norwegian, and 1 Danish; and of these 5 carried cargoes of coal for the railway company, 4 carried cargoes of lumber from Brunswick, Pensacola, Portland, Punta Averas, and the rest general cargoes.

FOREIGN COMMERCE.

The foreign commerce of Bahia Blanca for the last five years was as follows:

Year.	Imports.	Exports.	Total.
1882.....	336,028	2,652	368,680
1883.....	746,502	4,137	750,639
1884.....	299,876	379,615	679,491
1885.....	548,292	670,525	1,218,817
1886.....	274,849	801,230	1,076,079

As explaining the apparent decrease in imports, I may add that since the opening of the railway from Buenos Ayres a very large proportion of the supplies have been shipped by way of this port.

THE FUTURE PROSPECTS OF THE PORT, ETC.

In regard to the future prospects of Bahia Blanca, as I have already stated, the most sanguine expectations are entertained, these expectations being based on the fact that it is the only harbor in the Argentine Republic, and that "it is the natural outlet," as Dr. La Fuente, in charge of the last census, states, "of the exports of one-half of the Republic, as well as the most convenient port for the reception of foreign imports." He adds that

leagues of country, extending to the west and southwest of Mendoza, and to all that vast area comprehended between the Rio Negro and Colorado rivers, it requiring only a little effort for the province of Buenos Ayres to build here a maritime city of the first importance." In reference to the bay itself, I further translate from the same authority as follows:

In an economic and strategic point of view this great estuary has, throughout its whole extent, as well as that of the rivers running into it, a very grand future for the construction of docks, dykes, landings, and deposits for coal, and for the interchange of merchandise. The interior of the bay is sufficiently large for the maneuvers of a squadron, and would serve better than any other point for the base of the naval power of the nation. The soft bottoms of the rivers, and the great difference of level between high and low tide, admirably adapt the place for careening and cleaning the hulks of vessels, the entire estuary, from its entrance to the mouths of the Neportá and Sauce Corte rivers, having most excellent anchorage and holdings for vessels of any size.

Real estate in the town of Bahia Blanca ranges from 12 cents per square meter for outlying lands to \$12 in gold per square meter for lots in central positions. Outside or "camp" properties vary in value according to quality of land, proximity to the railway, depth at which wells have to be sunk to find water, etc. It may be stated, however, that the price ranges from \$8,000 to \$25,000 in gold per square league. Except in the near vicinity, the back country is as yet but little known, but as it nears the Cordilleras the land is said to improve greatly in its agricultural and pastoral possibilities. It is very doubtful if these lands will ever carry the quantity of stock usually placed on more northern camps, but the climate and grasses appear to be unusually favorable to sheep.

At the last session of the National Congress a concession was granted for a railway from Bahia Blanca to Villa Mercedes, in the province of San Luis, where it will connect with the Pacific and other roads leading to the north. The line is now in course of being surveyed, and the work of construction is expected to commence in the Spring, *i. e.*, September next. The extension of the Buenos Ayres and Great Southern Railway, from Tres Arroyas to Bahia Blanca, is also under survey, thus giving a new line running nearer to the Atlantic coast. Another road from Bahia Blanca to Carmen de Patagones is also projected, but it has not yet taken any substantial form.

Thus it will be seen, if Bahia Blanca does not become at once all that is anticipated of it, that at least it has a very promising future before it, and must ultimately be no inconsiderable port.—BUENOS AYRES, *June 27, 1888.*

E. L. BAKER,

Consul.

AGRICULTURE IN EGYPT.

Egyptian modes of agriculture are to-day exactly similar to those of from
 produced a singular country,

and in its floods than the agencies of production and reproduction in a land nourished by it since terrestrial symmetry was evolved. For thousands of years before Moses promised his followers a land drinking "water of Heaven," where the Israelitish cultivator would be spared the toil, as in Egypt, of watering his seed with his foot, have the methods of cultivating the soil been unchanged. Ancient Egyptians even surpassed modern Egyptians in agriculture. The country produced more, and there was greater public and private wealth than now. More land was in cultivation under the Pharaohs than under the Pashas; the broad and extended sea-coast was not a marshy waste; Lake Moeris was in existence; there were more canals, more irrigation, more cultivated fields, greater harvests, and greater independence. Egypt was rich and powerful, the Kingdom of great conquerors, the nourisher of powerful and invincible armies. Then she laid other countries under contribution; impressed hundreds of thousands of captive foreigners to accomplish the greatest works of human creation; had millions of treasure in store and grain for a famishing world. Now the superficial area under cultivation is far less than it used to be. There is not so much irrigation and not as bountiful production; there is public and private poverty; the magnificence of a nation has departed; Egypt produces no conquerors, but has become the home of the conquered. Yet, in this wretched condition, with her people taxed as they never have been before, simply to gratify foreign greed, Egyptians live; and, besides obtaining a sustenance, such as it is, in 1887 they exported a production valued at nearly \$55,000,000, without discussing the foreign pressure, which makes Egyptians deny themselves every human comfort.

In 1887 it is estimated there were in cultivation in Egypt 4,961,462 feddans,* but the crops cultivated for the same year covered 6,134,364 feddans. This is owing to what is known as intensive farming, causing the same soils to produce more than one crop in one year. There are three seasons of crop production in Egypt—chitwi, the winter season; sefi, summer; nili, autumn, or season of the Nile inundation. Therefore, in consequence of these different seasons of vegetation in one year, we find the entire cultivable soil of the country subjected in the Delta, or Lower Egypt, to the production of four crops in three years; and in the Nile Valley, or Upper Egypt, to seven productions in six years. In certain localities, where the soils are of superior quality and the conditions of irrigation most favorable, the proportions above indicated are surpassed.

Analysis of crops shows that wheat is comparatively more largely produced in Upper than in Lower Egypt, while bersim is nearly twice as extensively cultivated in the Delta. There are now over 930,000 feddans cultivated in Lower Egypt in cotton, and very nearly 110,000 in Upper Egypt. Beans are comparatively nearly twice as extensively cultivated in Upper Egypt as in the Delta, while Indian corn is mainly produced in the latter, the reverse being the case with doura. Barley is about equally culti-

vated in both sections, while rice is almost wholly produced in the Delta and near the sea coast. Twelve-thirteenths of the sugar-cane is produced in Upper Egypt. Lupines, tobacco, and peas are cultivated most extensively in Upper Egypt.

Below is presented a table of comparative cultivation for the year 1887:

Articles.	Ratio of total cultivation.	Feddans cultivated.
	<i>Per cent.</i>	
Wheat	20.25	1,241,100
Bersim (<i>Alexandrium trifolium</i>)	15.20	941,222
Cotton	14.13	865,526
Beans	12.34	755,868
Indian corn	11.15	683,825
Barley	8.50	520,351
Doura	7.20	441,295
Lentils	2.45	150,117
Rice	2.45	149,717
Fenugreek	2.15	130,674
Kitchen truck, onions, vegetables	1.30	79,069
Sugar-cane	1.16	71,203
Vetches	0.52	31,536
Melons, water-melons, cucumbers	0.35	20,764
Lupines, habba soda	0.22	13,376
Tobacco	0.20	11,657
Gray peas, kidney beans, etc.	0.18	10,951
Flax	0.11	6,376
Sesamum, castor-oil plant	0.07	4,958
Henna	0.03	1,694
.....	0.02	1,316
.....	0.02	1,210
.....		281
.....		276
Indigo		(8,746)
Poppies	100.00	6,134,364
Vineyards and orchards		
Total		

The culture, by seasons, is as follows:

Seasons.	Egypt entire.		Lower Egypt.		Upper Egypt.	
	Surface for culture, 4,961,462 feddans.	Ratio of superficial culture.	Surface for culture, 2,743,990 feddans.	Ratio of superficial culture.	Surface for culture, 2,217,472 feddans.	Ratio of superficial culture.
	<i>Feddans.</i>	<i>Per cent.</i>	<i>Feddans.</i>	<i>Per cent.</i>	<i>Feddans.</i>	<i>Per cent.</i>
Chitwi	3,954,466	79.70	1,948,690	71.02	2,005,776	90.45
Sefi	1,301,225	26.22	1,017,557	37.09	283,668	12.79
Nili	878,673	17.70	601,049	21.90	277,624	12.52
Total	6,134,364	123.62	3,567,296	130.01	2,567,068	115.76

... cultivation is practiced in

all the cultivatable land in Upper Egypt, preventing for a season the cultivation of crops, which, during the season of nili, are successfully grown, in consequence of protection against the flood in the Delta. There was widespread destruction of the growing Indian corn and doura in Upper Egypt, because of the great altitude of the waters during September and October, 1887.

From data before me I have prepared a very interesting table showing the relation between agriculture and population, enlarging it by provinces as well as by sections. Cultivation, as presented therein, embraces the three seasons, chitwi, sefi, and nili. This table is presented as follows:

Upper Egypt.

Provinces.	Surface cultivated.	Surface of soils cultivated.	Agricultural populations.*	Non-agricultural populations.	Total populations.
	<i>Feddans.</i>	<i>Feddans.</i>			
Assiut	442,175	419,100	360,068	191,119	551,187
Beni Senef	273,700	231,610	165,426	48,737	214,163
Fayoum	372,751	331,045	144,834	74,070	218,904
Geezeh	211,668	181,176	182,689	99,784	282,473
Minieh	444,323	397,240	229,793	76,229	306,022
Esneh.....	160,396	150,459	185,645	49,025	234,670
Guirgeh.....	356,829	325,915	353,438	163,196	516,634
Keneh	305,244	280,927	295,794	104,109	399,903
Total	2,567,068	2,217,472	1,917,687	806,269	2,723,956

Lower Egypt.

Provinces.	Surface cultivated.	Surface of soils cultivated.	Agricultural populations.*	Non-agricultural populations.	Total populations.
	<i>Feddans.</i>	<i>Feddans.</i>			
Behersh.....	553,507	467,662	264,297	114,362	378,659
Charkieh	566,938	434,982	320,443	138,253	458,696
Darkalieh.....	608,515	462,367	399,555	188,097	587,652
Garbieh.....	1,052,409	840,089	653,800	280,037	933,837
Kalioubieh	243,214	187,180	178,428	82,564	260,992
Menoufieh	542,713	351,710	465,461	180,284	645,745
Totals	3,567,296	2,743,990	2,281,984	983,597	2,265,581

* Not inclusive of oases and Government posts.

FRUITS AND VINES.

While the cultivation of fruits and vines does not constitute one of the most important agricultural industries of Egypt, it is interesting to consider it. In Lower Egypt are produced oranges and lemons of all varieties. Peaches and pomegranates are also produced, and near Alexandria figs and grapes. Dates are not largely grown in the Delta, except in the provinces of Charkieh and Gharbieh, where there are some very good plantations. In Upper Egypt fruit production is largest. In the Fayoum it is the

granates, apples, pears, grapes, apricots, plums, and olives. About Cairo, too, are grown with much perfection all the fruits named, as well as quantities of bananas. Olives are grown, besides in the Fayoum, in the province of Minieh and about Cairo. Grapes are produced in nearly every province, but the most important vineyards are found in the Fayoum, where their product is of a most superior quality.

Of fruit trees the date is the most important in number, superficial area, and production. In the Delta and valley of the Nile there are, from the seaboard to Assonau, over 5,000,000 date trees, 3,500,000 of which bear seed and fruit. In the oasis there are about 300,000. Charkieh and Sharbieh, in Lower Egypt, and Guirgeh, Guirzeh, and Assiut, in Upper Egypt, are the provinces in which they are mainly grown. Altogether they occupy a superficial area of 40,000 feddans. Of oranges, lemons, citrons, pomegranates, figs, peaches, apples, etc., there are said to be over 1,500,000 trees, occupying a superficial area of about 9,000 feddans. Outside of this estimate there exists a great variety of edible fruits, such as bananas, barbarian figs, medlars, mangoes, plums, apricots, mulberries, etc., of which it is impossible to make even an approximate estimate as to number.

CATTLE AND FARM ANIMALS.

I have obtained thoroughly reliable estimates of the number of various sorts of animals directly employed in agriculture, and these estimates do not embrace those not sufficiently matured to be productive; nor do they embrace those belonging to Bedouins.

In the provinces of Lower Egypt there are thus employed 129,000 oxen, 163,000 buffaloes, 28,000 camels, 14,000 horses, 3,500 mules, 114,700 asses, and 388,600 sheep and goats. In Upper Egypt there are 81,000 oxen, 88,000 buffaloes, 26,750 camels, 6,850 horses, 400 mules, 55,000 asses, and 569,000 sheep and goats.

In 1884 there was a most terrible epidemic of bovine typhus, resulting in enormous losses to agriculture. Since then there has been no grave epidemic malady among cattle and increase has been steady. The African buffalo was found to be less subject to disease than the ox, and the result has been that, proportionately, the former is more in use now as a farm-work animal than formerly. Besides being very hardy and more easily kept than the ox, the buffalo is a huge animal, of great power and endurance. Farm-yard poultry consists of chickens, turkeys, geese, ducks, pintados, etc. The stock of all varieties used in production is placed at 6,000,000 head. Pigeons are reared in great numbers, the stock for breeding purposes being placed at 10,000,000. Besides being reared for food pigeons are very highly prized as producers of guano.

2. 11. They flourish best in the lower portion of

Hogs are reared in small numbers. A mussulman never eats pork, and, of course, he would violate his faith by rearing the abominable hog. The animal is reared in small numbers in Coptic communities, and the breed of swine in use, I am satisfied, has been deteriorating since the devil possessed a certain herd in this part of the globe; and the man who eats such pork as is produced in a climate such as this is certainly not as good as a hog. One who contemplates the eastern hog comprehends the fitness of things which brought about the Jewish declaration that the beast is an unclean thing.

Milk diet among Egyptian agriculturists is a prime necessity, and yet no data exists from which any figures concerning the product may be presented. Both the common cow of Egypt, which belongs to a breed thousands of years old and of purest strain and great intrinsic merit, and the buffalo contribute to it. Great quantities of butter (the milk of both the cow and the buffalo being very rich in oil) are produced. The Egyptian cow greatly resembles the thoroughbred Jersey in form and in colors. Generally the former is not so clean in the neck as the latter, but the form is just as beautiful, the horns more crumpled, and the milk-flow as great and as rich as that of the beautiful pet of so many American dairymen. I feel convinced that the Jersey is the transplanted progeny of even the godly breed of Apis—inscriptions of the tombs and temples, I am satisfied, prove it beyond a doubt.

PRODUCTION OF COTTON.

The cultivation of cotton as a staple agricultural product of Egypt began in 1821. That year the lint product was 944 cantars.* In 1822 the crop amounted to 35,108 cantars, and in 1823 to 159,426. From then until 1849 the annual yield ranged, except when calamity befel the growing crop, from the neighborhood of the last-named figures to over 300,000 cantars. In 1850 impetus was given to production, and the crop reached 364,816 cantars, and from then until 1861 it ranged from about 500,000 to 600,000 cantars. In 1861 the crop was 596,200 cantars, and the average price was 280 piasters, equal to about 13 cents a pound. In 1862 the war in the United States had begun and production for that year reached 721,052 cantars, and prices an average of 460 piasters, or over 22 cents a pound. In 1863 the production was 1,181,888 cantars, and the average price of the cantar 725 piasters, equivalent to 35 cents a pound. In the following year the one was 1,718,791 cantars and the other 900 piasters, equal to over 44 cents a pound. In 1865 production was 2,001,169 cantars, and the price 635 piasters. For 1866 production fell to 1,288,762 cantars, and the average price to 705 piasters. From 1867 to 1879 production ranged from 1,250,000 to 2,500,000 cantars, while prices descended from 450 to 250 piasters per cantar. The following tables presents production and average prices since 1880:

* The cantar equals 98.09 English pounds.

Year.	Average price in piasters per cantar.	Cantars.
1880.....	281	3,123,515
1881.....	287	2,792,184
1882.....	275	2,846,237
1883.....	300	2,293,537
1884.....	270	2,686,382
1885.....	251	3,591,486
1886.....	228	2,904,842
1887.....	240	3,025,965

NOTE.—One piaster equals 4.9641 cents.

SUGAR.

Ismail Pasha, Khedive of Egypt, now in exile, inaugurated the production of sugar on a considerable scale in Egypt. He acquired large estates for the purpose, and had erected a number of very large and complete sugar mills—they are all in Upper Egypt. When Ismail was sent from Egypt and the Khedivate descended to his son Tewfik, the great estates which had been acquired by the former were declared the property of the state, and since then their management has been intrusted to a public administration known as the “Daïra Sanieh.” The lands were made the basis of a loan, and since they passed under foreign direction, the chief of the commissioners, a figure-head merely, being now the only native on the commission. With the finest lands in Egypt, leased for a term of two years at £ E. 10 per feddan (\$50), the Daïra Sanieh loses enormously every year, the losses for the last three years ranging from £ E. 250,000 to £ E. 400,000. Formerly these lands were not a tax to the state. Two-thirds of all the sugar-cane grown in Egypt is produced upon the Daïra Sanieh lands. The lands are leased to felahs, who are required to plant a certain proportion in sugar cane. The cane is taken for the mills at a price fixed by the administration, in the fixing of which the leases have nothing to do. All the mills remain under the direction of the administration, and in them are made all the sugar, molasses, and alcohol produced in Egypt. The aggregate values of the three products for the three years were, 1885, £ E. 599,287; 1886, £ E. 613,283; 1887, £ E. 373,859. In 1877 and 1878 the values were, respectively, £ E. 889,953 and £ E. 816,214. Then there was no foreign direction, except by experts engaged in the manufacture.

The sugar-cane produced on other than Daïra Sanieh lands is sold to the Government mills at prices fixed, as stated above, by the administration, and is by them converted into the marketable products. The sugar produced and is sold for £ E. 551,153; molasses, sold for

The losses to the state on account of the Daïra Sanieh administration is the result of excessive employment in both the executive and working departments. There is that wasteful extravagance visible in everything which universally attaches to all administration at this time in Egypt. Direction absorbs wealth, while the directed increase annually in poverty.—CAIRO, EGYPT, *July 11, 1888.*

JOHN CARDWELL,
Agent and Consul-General.

FOREIGN TRADE OF CHINA FOR 1887.

The total value of the foreign trade was 188,123,877 Haikwan taels, as against 164,685,891 taels for 1886. These figures do not include the value of goods carried coastwise nor goods carried in Chinese junks which are not under the control of the maritime customs.

CUSTOMS REVENUE.

The customs revenue for 1887 was 20,541,399 Haikwan taels, being an increase of 5,396,711 taels. Of this increase, opium lekin accounts for 4,645,842 taels.

EXPORTS.

The total value of the exports for 1887 was 85,860,208 taels, as against 77,206,568 taels in 1886, an increase of 8,653,640 taels.

In spite of the universal wail that went up over the depreciation of tea, the total quantity exported was 2,096,097 piculs in 1887, against 2,217,295 piculs in 1886. In quantity 5 per cent., 120,000 piculs less, left China in 1887 than in 1886. But the assessed value of the export in 1886 was 33,504,820 taels, and in 1887, 29,379,838 taels. "It is, therefore," says the statistical secretary of the customs, "to the depreciation in value with its likely effect in bringing about a diminished production in years to come that we must attribute the apprehension entertained for the prosperity of this vast industry."

The total quantity of white raw silk exported was 59,589 piculs. In this quantity 2,780 piculs is included which was exported in junks through the Kowloon and Lappa customs. Deducting this there remain 56,809 piculs, valued at 17,461,367 taels, a quantity almost identical with the export of 1886, but the value is 5 per cent. higher. The same remark applies to other classes of unmanufactured silks.

Of brown sugar there was exported 458,268.85 piculs in 1886, against 634,179.12 piculs in 1887, an increase of 175,910.27 piculs.

Of white sugar there was exported in 1886 128,828.14 piculs, against 113,475.42 piculs in 1887. Of sugar candy there was exported 25,392.97 piculs in 1886, against 19,288.96 piculs in 1887. Sugar has therefore

Next to tea and silk comes straw braid as an article of export. The growth of this trade has been rapid. The exports were as follows: 1883, 58,627 piculs; 1884, 78,168 piculs; 1885, 76,494 piculs; 1886, 82,413 piculs; 1887, 150,952 piculs. The value in 1887 was 3,738,310 taels.

The principal original places of export are Tien-Tsin and Chefoo, the largest exportation being from Tien-Tsin. Great complaints have been made by foreign merchants of the bad condition in which this article has been brought to market, but the trade has nevertheless steadily increased.

IMPORTS.

The total value of the imports of foreign goods was 102,263,669 taels, against 87,479,323 taels in 1886, an increase of 14,784,346 taels.

Last year imports show an increase of 6,562.25 piculs in opium, an increase of 7,933,309 pieces, dozens, and piculs of cotton goods. They show also increase in miscellaneous piece goods, in metals, and in sundries. At the nineteen treaty ports the imports of English and American drills fell off from 416,699 pieces and 620,803 pieces, respectively, in 1886, to 288,511 pieces, and 464,731 pieces, respectively, in 1887. Cotton lastings rose. Cotton yarn increased from 382,984 piculs in 1886 to 523,114 piculs in 1887.

The import of kerosene was, in 1886, 23,038,101 gallons; in 1887, 12,015,135 gallons, an enormous decrease. The statistical writer says: "As qualifying the vast discrepancy in the figures of the two years I am told that whereas the stock in Shanghai at the end of 1887 was only 5,500,000 gallons, that of 1886 was 10,500,000 gallons."

We find that the value of the imports from the United States in 1886 was 4,647,333 taels, and in 1887, 3,398,390 taels, a decrease of over 1,000,000 taels. It is probably accounted for by the decrease in petroleum. The exports to the United States were, in 1886, 11,928,404 taels, and in 1887, 11,545,406 taels. The total trade with the United States was 14,677,487 taels in 1886, and 12,314,310 taels in 1887.

TRADE OF LEADING FOREIGN COUNTRIES.

The imports and exports of the leading foreign countries were as follows: Hong-Kong, 89,154,228 Haikwan taels; Great Britain, 42,149,286 Haikwan taels; Europe (Russia excepted), 14,132,954 Haikwan taels; United States, 12,314,310 Haikwan taels; Japan, 7,678,442 Haikwan taels; India, 6,334,945 Haikwan taels; Russia and Siberia, 5,704,281 Haikwan taels.

SHIPPING STATISTICS.

Based in 1887, the representation of the most im-

EXCHANGE.

The average rate of exchange on London during 1887 was the lowest average of any year on record

The average value of the Haikwan tael during 1887 was 4*s.* 10½*d.*, against 5*s.* 0½*d.* in 1886. To understand exactly this question of exchange let it be remembered simply that a person lays down at the bank at Shanghai a tael and inquires how much that will bring him in London. When the answer is 4*s.* 10½*d.*, instead of 5*s.* 8½*d.*, as in 1882, it will be seen how trade is affected and how grievously those residents of China suffer who are compelled to send money home to their families. The tael in which they receive their salaries or wages is becoming day by day of less value, and their incomes are proportionately diminished. If, however, all the money earned is spent in China, the depreciation of the tael only remotely affects them. Prices of labor and of articles produced in the country are ordinarily not affected by the depreciation of silver. It is only the foreign value that is depreciated.

It must be said also that the high price of exchange or the low price of silver, as compared with gold, tends to stimulate foreign trade. As there is a great loss on silver converted into gold on London, the foreign merchant increases his exportations that he may get products in London which may be bargained for gold. The import trade is likewise stimulated, because the merchant is induced to bring goods to China which may be exchanged for native products. The low rate of exchange is, therefore, not an unmixed evil. The customs reports for 1887 show a considerable increase of business in spite of dearness, or, as they would say here, lowness of exchange, and in spite of the lugubrious complaints of all classes of merchants, particularly of dealers in tea. The tea market opened this year at higher rates than ever before, which fact is a curious commentary on the alleged ruin which attended the trade last year and which was prophesied this year.

OPIUM.

The statistical secretary thoroughly explains the new opium regulations. February 1, 1887, the system of collecting duty and lekin on opium, which had formerly appertained to the local officials, was transferred to the Imperial maritime customs.

Two new offices of the customs were opened on April 2 at Kowloon (opposite to Hong-Kong) and Lappa (near Macao), to have supervision over the revenue accruing to China out of the commerce carried on in junks between Hong-Kong and Macao, respectively, and the main-land of China.

On June 1 Hong-Kong passed a new ordinance placing the opium trade within the colony under special regulations. These regulations prohibited the unauthorized possession of raw opium in smaller quantities than whole chests, and required retailers to record and account for raw opium taken over

the same in the nineteen treaty ports and in the two new ports of Kowloon and Lappa, and there being no difference in the tariff in favor of opium carried in junks, as heretofore, opium is now generally carried by steamer.

The secretary does not think that opium consumption has increased in China; but, for the first time, there are accurate statistics. Heretofore large quantities entered China lawfully and unlawfully of which no record was kept. A preference for native opium is said to have been developed. The Haikwan tael, in which the customs revenues and all values are stated, is equivalent in English money to 4s. 10½*d.*; American gold, \$1.20; French francs, 6.18; German marks, 4.95; Mexican dollars, 1.54. The picul is equivalent to 100 catties, or 133½ pounds avoirdupois, or 60.453 kilograms. The catty is equivalent to 16 taels, or 1½ pounds avoirdupois, or 0.60453 kilograms. The tael is equivalent to 1⅓ ounces avoirdupois, or 0.037783 kilograms.—PEKING, *July 14, 1888.*

CHARLES DENBY.

DANISH AGRICULTURAL EXHIBITION.

I herewith present a report on the agricultural division of the Great Northern Exhibition, which was opened to the public under such favorable auspices in this city on the 18th of May last. This agricultural department is divided into four sections—No. 1 containing a general arrangement, as well as what may be styled a history of agriculture; No. 2, agricultural products; No. 3, live stock; No. 4, dairy drift. According to the catalogue, the first of these sections contains no less than five hundred and fourteen numbers from Denmark. It is certainly the first time that an exhibition of this nature has been seen in this country, and will unquestionably draw the attention of all visitors, as the whole representation is carried out in a very masterly manner. An insight is here obtained of the habits and conditions of country life in by-gone days. On entering this division the eye is at once attracted by the numerous colored drawings decorating the different walls—characteristic drawings, bringing to view the great changes and improvements which have taken place in farm buildings during the last hundred years, from the small, low dwellings of wooden frame-work of the last century to the solid and well-arranged brick-built houses, with their good out-buildings for cattle and storage of products, of the present time. Here, again, is to be seen a colored drawing of an old village meeting-place in the Island of Fyen, at a time when every town had its store beneath a tree, the village horn summoning all the villagers to the meeting-place, where all matters concerning public business were then discussed under the presidency of the leading man of the

There are also to be seen drawings of the gradual development and

of days of yore as compared with the fine types of the present age. Furthermore are to be seen large and interesting charts, demonstrating the various influences affecting the condition and development of agriculture. Here is to be found noted the time of arrival of spring and autumn in Northern Europe, with the mean temperature and rainfall in Denmark during the months of April to October. Here is also to be seen in which way the difference of temperature in this land makes itself felt. For example, through the close proximity to the sea, on the coasts of Jutland, Fyen, Zealand, and Bornholm, the climate from August to October is seen to be considerably milder than in the interior of the country. Again, the influence of the forests in relation to the moisture is also here shown by the greater amount of rainfall in the woody districts of the north of Zealand as compared with the remaining districts of the island; and the agriculturist, on his visit to this section, may learn that, however much he may complain of the hardships of the present times, still, when passing under review the conditions of their class in days of yore, he can not do otherwise than acknowledge and rejoice over the wonderfully great progress and improvement made in every direction since the introduction of all the great agricultural reforms.

The second section of agricultural products makes a very pleasing and harmonious impression. The numerous exhibitors have exerted themselves to the utmost, and the result is certainly all that could possibly be desired. This especially may be said both in regard to cereals as to seed samples, of which, both from Denmark and Sweden, exceedingly fine collections are to be seen. Likewise the group of scientific aids towards the advancement of agriculture is highly interesting; and this is specially due to the rich collections sent by the Veterinary and Agricultural College, as well as from the various models in plaster of Paris and papier-maché from Germany.

The dairy at full work, as might be expected, attracts great attention and has at all times a large number of visitors. In this dairy both the machinery and implements in use are exclusively of Danish manufacture. This department naturally contains very valuable and fine collections of everything appertaining to a well-appointed dairy—centrifuges, churns, kneading-machines and boards, cheese-presses, cream casks, weights, heating and cooling apparatuses, pails and wagons used for transport, etc. Numerous and fine exhibits of butter and cheese coloring, of cheese-rennet, etc., are also to be found. Likewise, in this department, have the Swedish exhibitors come forward with remarkably fine exhibits, and which plainly bear witness to the eager competition between the two countries on dairy ground. According to the catalogue, there are three hundred and sixty-three exhibits under this branch, of which two hundred and ninety-five are from Denmark. A visit to this department must present, even to the minds of non-agriculturists, a clear conception of the important position held by the dairy drift in these northern kingdoms.

that this department is spread over different spots, and for this reason can scarcely make so imposing an impression as when it had been united in one place. A large number of exhibits from all of the three countries are to be found in the machinery building. Then, in the open plain, are to be seen the exhibits of Swedish implements and machinery, together with rails, wagons, etc., for field railways, whilst in another spot are to be found extensive exhibits of locomotives and thrashing-machines, placed in open sheds but sheltered from the rain, as also a large number of plows, harrows, and other implements capable of supporting exposure in the open air. As showing the richness of this exhibition of agricultural machinery and implements, it may be observed that these are represented by exhibits of 54 sowing-machines from Denmark and 10 from Sweden; with 19 mowing and reaping-machines from Denmark, 8 from Sweden, and 1 from Norway; with 19 horse-rakes from Denmark and 8 from Sweden; with 36 thrashing-machines from Denmark, 18 from Sweden, and 1 from Norway. Of various kinds of plows, are to be found: 110 from Denmark, 22 from Sweden, and 14 from Norway; and of road-cleaners, horse-hoes, weeding-machines, seed-harrows, rollers, winnowing and sorting machines, root-cutters, crashing-machines, oil-cake bruisers, the exhibits, as might be expected, are on a large scale, there being altogether 490 numbers from Denmark, 139 from Sweden, and 38 from Norway.

In the historic collection will also be found a great wealth of objects in use in olden times—such as plows, harrows, spades, forks, rakes, carts, saddles, horse-bits, etc.—and when, side by side with these old (and very old) types of implements are to be seen the more modern articles, and the harvest of the new, it may be said that, step by step, the visitor finds placed before him an illustration of the gradual stages of progress and improvement that Danish agriculture has traversed in the domain of agricultural implements.—
COPENHAGEN, DENMARK, *August 7, 1888.*

HENRY B. RYDER,
Consul.

AMERICAN AND RUSSIAN OIL IN BOMBAY.

The sales of kerosene oil from June 1, 1887, to June 1, 1888, were 870,000 cases, of 10 imperial gallons each. Out of this 320,000 cases were American and 550,000 cases Russian; both 125° Government test; both put up in cases of 2 tins of five imperial gallons each. The American oil realized 3.70 rupees per case. Russian oil, 3.50 rupees per case. Quality about the same. Russian oil is very generally used, and the brokers report that Russian oil is fast on the market here in future. Sun Flake American

COMMERCE AND INDUSTRY OF THE PROVINCE OF KOUANG-TONG.

[From Bulletin Consulaire Française, June, 1888—Translated by Gaillard Hunt.]

Kouang-Tong is a province in the south of the Chinese Empire. It is the largest, the richest, but, it must be added, the least known. Its commercial relations with the people of the East began in 1720, with the establishment of the Hong, a privileged corporation of Chinese merchants, to whom was given the monopoly of foreign commerce.

The province is bounded on the north and northeast by a range of mountains called Nan-Sin, which separate it from Hou-Nan, Kiang-Si, and Fo-Kien. To the west it touches Kouang-Si and Tonkin, and in this direction it has as a natural boundary the river Annan-Kiang, the chain of Fen-mo-lin (the Ten Thousand Mountains), and the lofty heights of Loh-Yang. To the south the coast extends from Fo-kien to Tonkin, a distance of 240 leagues. It has most excellent harbors and the ports of Swatow and Pakhoi, open to foreign commerce, are upon this coast. The large island of Hainan, of which Kiung-Tcheou-Fou is the capital, and which has Hai-How as its port of commerce, is administratively dependent upon Kouang-Tong. Situated directly above the island is Lie-Tcheou, the extremity of which, traversed by the 20th degree north latitude, is the most southern point of the Celestial Empire. The number of inhabitants of Hainan, Chinese colonists, is now 2,300,000 people. The center, which constitutes the heights known as Ou-Tc'hé-Chan (mountains of Five Fingers), is occupied by savage tribes called Li.

The population of Kouang-Tong is estimated at about 30,000,000. It has centered principally about the deltas, where towns and villages succeed each other at short distances. The inhabitants are allied to the Pounti, Hoklo, and Hakkas races. The Pounti are the most numerous, and form the class of merchants, aristocrats, and rulers. The Hoklos dwell more particularly among the swamps of the large rivers and the country on their banks. They live almost entirely in their boats, and constitute that vast fleet of watermen which crowds the river at Canton and spreads by tens of thousands over every portion of the delta. The Hakkas, who have for the most part retired to the northeast of Kouang-Tong and to the island of Hainan, represent the Chinese race, properly speaking, in the provinces of the south. They are almost entirely of the agricultural and laboring classes. Their dialect differs from the dialect of Canton, the Pehoa, which is the Pounti tongue pure. This province, which has a surface of about 234,000 square kilometers, is divided administratively into 9 *fou*, or cities, of the first order, 5 *ting*, 4 *tcheli-tcheou*, 7 *tcheou*, towns of the second order, and 77 *shien*, towns of the third order. It forms with Kouang-Si the general government of the two Kouangs.

The climate of Kouang-Tong is said to be similar to that of Tonkin. The temperature follows the changes of the monsoons. It is, consequently, less equal than in other countries of the same latitude. The monsoon of the southwest always brings with it, in the basin of the Si-Kiang, showers and heat. From June to August storms are of almost daily occurrence, and it is during this period that the tropical flowers are in all their splendor. With the regular winds of the northeast, from October to February, the drought appears, and with it a low temperature. The mountains and plains take at this season the yellow tint of the regions of the north. The months of February and March are misty and cold. The average temperature of the year is 22° Centigrade; in August it is 28°, and in February 15°.

The cities of Kouang-Tong are nearly all built either upon the banks of a stream of water, at the entrance of a mountain gap, at the mouth of some gorge, or on some spot where the streams and the affluents of navigation necessitate a depot of merchandise, the only routes generally practicable being by the rivers.

The Si-Kiang (the River of the West) is the

Ou-Tcheou-Fou, near the boundary of Kouang-Si, about 300 kilometers from the sea, and the merchant junks penetrate even to Pe-tche. This magnificent river has a course of at least 1,500 kilometers. At Ou-Tcheou-Fou the Si-Kiang receives the water of the Fou-ho, which descends to Kouei-ling-Fou, the capital of Kouang-Si. It passes by Nan-Ning-Fou, where it takes the name of Yu-Kiang, to where one of the affluents, called the Tso-Kiang, flows to the frontier of Tonkin by Tai-ping-Fou and Long-Tcheou.

The Pe-Kiang, (the River of the North) flows into the Si-Kiang at San-Couei, about 20 degrees distant from Canton. It has its source in the mountains Mei-lin, near Nan-Chiong-Fou, which is the entrepôt for the merchandise sent to Canton from Kuang-Si. From this town communication has been established with the basin of the Yang-tse-Kiang by a mountain road running near Nan-Ngan-Fou (Kiang-Si) and by the river Kan, which descends from the lake Po-Yang. This route connects the provinces of the north with those of the south, and is now followed by the mandarins returning to Peking. From Téhao-Tcheou-Fou, a pre-fectoral town situated about 35 leagues from Canton, one branch of the Si-Kiang runs down to the frontier of Hou-Nan.

San Chouei (the Three Waters) is the limit of the delta. At this point the main river directs its course to the west and reaches the sea near Macao. The other arm flows to the east, passing the important market of Si-nan and Fou-Chan, and joining the innumerable streams of water which flow in the alluvial lands of Canton, and runs into the sea at Bocca Tigris under the name of Tchou-Kiang (River of Pearls).

In the direction of the east a large river, the Tong-Kiang (Eastern River), runs up to Kiang-Si, and has its ramifications in the labyrinth of rivers of the lower Si-Kiang. It flows by Houei-Tcheou-Fou, by Ho-Yuen-Shien, Long-Tchuen-Shien, and Ho-ping-Shien. The depot of the rivers is at Tch'ang-Nin-Shien, about 75 leagues from Canton. By this route the products of the south of Kiang-Si and of Fo-Kien arrive in the delta. At Lao-long-sse, a five days' march from the mouth of the Tong-Kiang, the commercial route is divided into two branches, meeting at Tong-Kin-sse, one of which is a road on the land 4 leagues in length, the other an affluent of the Han. It flows toward Fo-Kien. The main river, Han, on the other hand, runs by the mountains on the west of the province and flows into the sea at Swatow, bringing to the market the principal products of eastern Kouang-Tong, sugar and arachides.

The delta of the Si-Kiang is so well preserved by an immense net-work of natural cane from the waves of the tide, which rises twice a day, that it is almost wholly navigable. The junks, most of which have a large wheel at the stern put in motion by a system of paddles worked by fifteen coolies, circulate freely with passengers in all directions. There are besides on the rivers of Kouang-Tong four or five other species of boats, large and small, for the service of voyagers and official personages. Merchandise, such as salt, rice, indigo, pork, cinnamon, fresh fruits, salt fish, and fire wood has a special variety of boat for its transportation in bulk. One Chinese company has established between Canton, Fatshan, and Kouang-Si a service of thirteen large junks for the transport of textures of foreign production in piece and of some native products. In the space of one month these junks carried to the markets of Kouang-Si about 35,000 piculs of merchandise, and brought back to the delta on return a cargo of products of the interior.

Nevertheless a great part of the merchandise destined for Kouang-Si is sent from the port of Pakhoi. It follows a land route, after having gone up the river Lien or Nan-liou-Kiang, turning at Yu-lin-Tcheou and Yong-Shien, in eastern Kouang-Si. At some point the Chen-Kiang, which flows to the

By these three roads merchandise of English, German, and American production arriving at Hong-Kong is introduced into Kouang-Si, Yun-Nan, and Kouei-Tcheou more rapidly, it appears, than by the way of Canton and the river. These routes are perhaps more difficult, but, the distance being shorter, the merchandise meets fewer likin stations and is less obstructed. The total value of the foreign importations at Pakhoi in 1886 was 1,705,254 taels. As for exportation the figures reach 1,061,757 taels (statistics of Chinese maritime customs).

The principal articles exported are cinnamon, anise-seed, cakes of arachide, hides, liquid indigo, tin, etc. It is important to the future of our trade at Tonkin that an active commerce should not be established in this direction. If expedition be used it will be easy to turn it to our profit at Long-Tcheou again.

A line of telegraph was started in the province of Kouang-Tong in 1883. The principal stations open to the public are Houang-Pao (Whampoa), Houmen (Bocca Tigris), Fou-Chan (Fatschen), in the delta, Tchao-Kin-Fou, on the Si-Kiang, and at the east Houei-Tchao-Fou and Swatow, at the southwest Lié-Tcheou-Fou, Pakhoi, and, since 1886, Kin-Tcheou and Tong-Sin-Kiai, on the frontier of Tonkin near Mon-Kay. On the peninsular of Lre-Tcheou a submarine cable traverses the Strait of Hainan, bringing together King-Tcheou-Fou and Hai-How. The principal districts of this island have been ever since last year in telegraphic communication with Canton. * From Tchao-Kin the telegraph extends into Kouang-Si, following the River of the West. In 1884 and 1885 stations were established at Ou-Tcheou-Fou, Sun-Tcheou, Hung-Tcheou, Nan-Ning-Fou, Long-Tcheou, and Pin-Siang (the port of the south) near the Annamite frontier, and, finally, a wire has been run from Ou-Tcheou-Fou to Kouei-lin-Fou, the capital of Kouang-Si.

The service of transporting correspondence is done by individual enterprise. At Canton a number of Chinese merchants have opened a kind of postal bureau, which has charge of the expediting of letters. But in the interior it is customary to give the communication to a master of a boat, who, provided a reward is designated on the envelope and given on arrival, sees that the letter is properly delivered. Letters intended for officials are transmitted to the under-prefect, and by him forwarded by swift and expeditious boats or by special couriers.

PRODUCTS OF KOUANG-TONG.

Silk and silk manufactures.—The silks of Canton come entirely from the silk-worms of the mulberry tree (*Bombyx mori*). The species *ta-t'san* and *lun-yue* are raised principally in this province. The first corresponds to the variety known as annual; the second to the *polyvolnines* species. The *ta-t'san* or large worms give a silk of beautiful texture and of great brilliancy. The *lun-yue*, from which seven consecutive harvests are made, does not produce a cocoon so fully supplied or a silk so lustrous. The eggs are hatched in the beginning of February. The cocoons produced at this period are saved for reproduction, and the first harvest does not begin till the second hatching. After the fourth moulting the silk-worm, having become clear and transparent, is placed under frames with cells of bamboo to fill a cocoon. The greatest care is taken by the silk-growers in educating the silk-worm. They are occupied almost the whole year. The mulberry tree is also cultivated with great care. The trees are planted on plains in parallel rows at a distance of 4 or 5 feet from one another. They are not allowed, as in Italy and in the central part of France, to attain full growth. They are generally young trees, trimmed each year and renewed every five years. It takes at least 20 piculs of leaf to nourish an ounce and a half of silk-worm from the day of hatching to the day of placing in the frames for the cocoons. The first harvests are the products of fresh cocoons. The process of suffocating is not until the last harvest, the abundance of which furnishes a supply for many months. It is estimated that 100 pounds of good cocoons give 20 pounds of silk.

quality, are the under-prefectures of Nam-Chiai, Kiou-Kiang, Mei-Ts'uen, Sha-t'o, Si-Kiao-Chou, under-prefecture of Chun-Teh, Kouei-Tcheou, Kan-Tchou, Jong-K'i, Hoang-Lien, Lo-Leou, Shui-T'ang, Long-Kiang, Long-Chan, Nang-Ngno-Fou, and in the under-prefecture of Sam-Chouei, Si-Nan.

These different districts produce indiscriminately the *tsatlee*, or native *paque-taille*, and the silks of the spinning factories. There are 120 European spinning factories in the neighborhood of Canton.

The exportation of silk *grège* reaches at Canton the figure of 1,300,000 kilograms per annum on the average. The waste of silk, stuffings, curlings, and opened cocoons, and rarely cocoons entire, are exported to the markets of Europe and Bombay.

The transactions in silk in the Canton markets are carried on by native merchants, who operate either on their own account or for a commission with those who collect the raw product and bring it in the districts where it is produced. The silk is sent to foreign merchants free of all customs duty or other charges. The payments are made in cash.

For the year 1887 the total exportation of silk of all qualities and fragments of silk was about 2,000,000 kilograms.

Silk fabrics are very numerous in kind and quality. It would be difficult to give the detailed nomenclature, and it is impossible to state the importance of the native consumption. The principal articles ordinarily made are satins, velvets, silk handkerchiefs, gauze, crêpe, embroideries, ribbons. The stuffs are all woven by the most primitive methods. Canton and Fatschan are the centers of industry in Kouang-Tong. The embroideries, the crêpe shawls, and the silk for handkerchiefs, and that already made into handkerchiefs are the only objects of regular European demand. For some months the manufacturers of Lyons buy in great quantity the silk for handkerchiefs to imprint and stamp.

The silk fabrics exported annually from Canton weigh more than 360,000 kilograms, and in value are worth more than 30,000,000 francs.

Teas.—Canton exports both black and green teas, more particularly the qualities known as "Congous" or scented caper and scented orange caper. The most renowned regions of production are Ta-Chan, near Canton, Lo-Ting-Tcheou, at the west of the province, Ts'inyuen, near the Pe-Kiang, and Kouang-Kon, at the environs of Kouang-Ning-Shien, upon the river Souei-Kiang. The principal higher qualities of scented caper come to the market of Si-Kiang, in the sub-prefecture of Yan-Shan. Some tea is also cultivated in the surroundings of Ho-Yuen, Hoh-Chan, Ho-Ning, Ping-Yuen, etc.

The cultivation of tea is very remunerative to the farmers. It is indeed easy and requires little care. The shrub is produced from seed, and prefers a damp marled soil upon the side of a hill exposed to the south. Generally no preparation of the soil is necessary. Nevertheless in some districts the young plants are manured with fresh herbs. It requires three years before the tea-plants will bear. The first harvest, which furnishes superior qualities, is made in May; the second in June. The latter is much the more important. The third and fourth, which are in the middle of August and September, give the common teas. The preparation necessary for the leaf is of the utmost importance for its quality and preservation. After gathering, the leaves destined to become black tea are dried in the sun; those which are to become green tea are dried in the shade. The leaves are then picked, winnowed, and torrified. The teas are sent in sacks and transported to the market of Canton by special boats, as has been said above. The packages of boxes of zinc are made in Canton. For their

duties (Macao is a free port), and consequently are sold at a much lower price. At Canton the Congous are sold at 14 to 30 taels per picul. The price for the seented caper and orange pekoe varies from 10 to 30 taels.

The exportation of the teas of Canton for 1886 did not attain the figures of 102,902 piculs, being a decrease from the year preceding of 28,210 piculs. This diminution is becoming more pronounced each year, and the commerce in tea, not only in Kouang-Tong, but in all China, is destined to disappear in a little time if the Imperial Government does not take measures immediately to protect it against the competition of the teas of India, Ceylon, and Java. These last are free from all levies of interior taxes or export duties. Again, the expense which is incurred by teas landed at London is 30 per cent. more considerable for those of China than for those of India. As a result the sale for consumption of the Chinese teas has diminished very sensibly—about 6,500,000 pounds in five months.

For remedying this state of affairs it will be necessary to remove all encumbrances from the cultivation and preparation of the teas of the Celestial Empire, and to free this commodity completely from all species of likin taxes and from all duties of exportation. This is the view that has been expressed by the Chamber of Commerce of Fou-Tcheou and by the dealers in tea in the city of Canton.

Sugar.—Sugar-cane is cultivated in almost all of Kouang-Tong. The richest places of cultivation are the departments of Kouang-Tcheou-Fou, Tchao-Tcheou-Fou, Houei-Tcheou-Fou, Nan-Shiong-Fou, in the east of the province, and the districts of Hai-an and Hai-how, in the island of Hainan. Many varieties of sugar-cane are planted in these different regions, the most generally cultivated being the Tcheou-Chan (bamboo cane). It is white, hard, and thin, but the juice is plentiful. One planting gives two crops, but the crop of the second year is less productive than is that of the first year. The cane is the only sugar product cultivated by the Chinese.

The works for the preparation of the sugar are supplied with tools and established with little cost. The material is without real value. The rolling is done on the spot by the proprietors of the plantations. The mills are composed, as at Manila, Java, and in Cochin-China, of two wheels put in motion by a buffalo. Three boilers, supplied with a fire of dried cane-stalks, receive the juice, which, when boiled, becomes thickened. A little lime is added, and it is cleared with the white of egg. The sugar is then covered up, purified, and drained into moulds of sandstone. Although very simple and primitive, the Chinese methods give good selling sugar.

There are three kinds of sugar, the pe-kang (white sugar), the houang-kang (red sugar), and the ping-kang (candied sugar). These three classes are subdivided again according to their qualities—the fine white, the white, and the light brown for the white sugars; the clear yellow, the ordinary yellow, and the yellow brown for the red sugars. The candied sugar gives three or four kinds, the transparent candy and the white, the transparent and the clear yellow, and the candy opaque and brown. The prices in the market of Canton are in proportion and according to the quality. For white sugars, \$7 to \$8 a picul; for the red, \$5 to \$6, and for the candy, \$7 to \$9. Inferior raw sugar and molasses are also sold at prices ranging from \$1.75 to \$3 a picul.

Sugar is one of the essentials of Chinese food. The consumption is enormous and can not be calculated. The province of Kouang-Tong sends each year, by steamer direct to Tien-Tsin, Tchefou, Hankheou, Shanghai, and Ningpo, more than 700,000 piculs of sugar to be distributed among the different ports.

The exportation of sugar from Canton for Hong-Kong and foreign ports gave in 1886 the following figures (Statistics of Imperial Maritime Customs): brown, 79,595.79 piculs; white, 2,334.93 piculs; candy, 4,040.99.

Three refineries, on the European system, have been started at Hong-Kong and one at Swatow. The refined sugar which they produce is white and better purified than that of native manufacture. But the Chinese prefer their own sugar, saying it is much richer and more highly saccharine. Nevertheless, as the following analysis shows, it can be seen that the raw sugar refined by the European process is 20 per centum richer than that refined by the native process. However that may be, the Chinese buyers always show a preference for the native sugars, although they are much dearer than those of the European factories of Hong-Kong and Swatow. Some merchants deal in both kinds, and sell them in the ports of the north under the title of native sugars. They thus make large profits.

The sugars of Java and the Philippines are sometimes imported into Hong-Kong, Shanghai, and Tien-Tsin, and put upon the market at a very low price in competition with sugars of Kouang-Tong.

Cassia lignea (or cinnamon of China).—The *cassia lignea* is the dried bark of a tree 8 or 9 feet in height. The *laurus cassia* is planted upon the slopes of hills. It grows rapidly and easily. The Chinese cinnamon, which is sold in the markets of Canton and Pakhoi, comes from the department of Lo-Ting-Tcheou, in Kouang-Tong, and from the districts of Ta-ou and Yong-Shien, in the Kouang-Si, by the right bank of the Si-Kiang. The exportation of this product for Europe, America, and India is about 80,000 piculs per year, and attains a proximate value of 2,600,000 francs.

The commerce in *cassia lignea* was, some years since, given to a syndicate of ten or twelve Canton merchants. They bought this monopoly very dearly, and had besides to pay light taxes of likin. In 1886 this syndicate sold or gave up its privilege to an influential employé of the palace of the treasurer of the province. The market of *cassia* was at the mercy of this individual. One German house made an attempt to establish routes of trade and sent one of its agents into the cinnamon districts. The high authorities of Kouang-Tong fearing to lose a considerable revenue, which, by the transit pass, ought to go into the chest of the central treasury, with this object in view, taxed the *cassia* a fixed likin duty of one-half tael per picul. The transit pass did not give the buyer a sufficient advantage.

The average price of the *cassia lignea* at the place of production is now for 1,000 piculs \$3,270. The prices for this same quality in the market are: (1) Warehousing in the interior, carriage, boat, packing in mats, and transport on board junks as far as the River of the West, 275 taels; (2) transport to Canton, 200 taels; (3) likin tax, 500 taels; total, 975 taels, or \$1,350; (4) warehousing and packing at Canton, \$1,100; add the price of purchase, \$3,270; total in dollars for 1,000 piculs, \$5,720.

The *cassia* exported from Pakhoi descends the Ning-Shien, at Lien-Tcheou-Fou, by Pei-Liou-Shien and Yu-Lin-Tcheou. Although this route may be much shorter than that by the Si-Kiang, at Canton, the charges are still considerable. It is not, moreover, practicable during the time of the rains.

The maritime customs authorities, administered by Europeans, receive 94 cents on the dollar per picul of *cassia* on its exportation from Canton and Pakhoi, whilst the Chinese customs, properly speaking, in order to draw from this some revenue, levy upon the products in junks to Hong-Kong an export duty of but 70 cents on the dollar. The foreign merchants find it to their advantage to buy the *cassia lignea* free of all charges at Hong-Kong, where it is sent in junks by the native merchants for a freight of \$80 per 1,000 piculs, and delivered at the approximate price of \$6.50 per picul.

Rice, wheat, corn, millet, barley, sorghum, and buckwheat are cultivated in all the valleys taken in the cultivation of rice, the

The price of rice is approximately at Canton for superior quality 2.90 taels; for the average quality, 1.90 tael, and for poor quality, 1.60 tael. The result is variable.

The grain harvested in Kouang-Tong is not sufficient for the support of the inhabitants. There is imported into this province, by way of Pakhoi and Canton, from Saigon and the ports of the Yang-Tsi, about 5,500,000 piculs of rice each year. A part of this valuable grain is sent by the River of the West to Kouang-Si, which in exchange sends to Canton superior rice. This province is, in fact, very renowned for its fine quality. This cereal is an important article of commerce, and the city of Tong-Chuen, upon the Si-Kiang, between Ou-Tcheou-Fou and Nan-Ning-Fou, is one of the largest markets for rice in the south of China. If, by reason of drought or freshet, one harvest fails, the figures of importation of rice are doubled and tripled in all the ports of Kouang-Tong accessible to steam-ships and junks of the high sea. But the means of transport into the interior are very slow and sometimes impassible. In 1885, after a disastrous flood, famine followed in Kouang-Si. Boats loaded with rice went from Canton, which do not ordinarily take more than eighteen or twenty days to reach Ou-Tcheou-Fou, had at this time to struggle against the violence of the current of the Si-Kiang, and did not reach the frontier of Kouang-Si until after a journey of more than one month. If the Chinese would permit the railroads of Tonkin to penetrate into Kouang-Si, the inhabitants would be, in case of distress, under shelter from the horrors of famine, which will always menace them so long as their province shall continue to be provided with long and difficult routes. This would, perhaps, be a good reason for demanding from the Imperial Government that our railroads be allowed to enter their boundaries.

Mats.—The manufacture of mats of reed, bamboo, and rushes, and the *coix lacryma*, in Kouang-Tong. The last variety is especially made into sails for junks.

The matting woven from cane is about the only article of this kind exported to foreign countries. The steam-ships alone, which sail from the port of Canton, export each year more than 150,000 rolls. The larger part is destined for the United States. Nevertheless it is worthy of note that the exportation of this article to France is increasing from day to day; but it would be difficult to give in figures, even approximately, the value of the importation. The French demand for this production of Canton industry continues to be conducted entirely through the medium of German and American houses, and the merchandise is sent from Hong-Kong, the port of distribution for the commerce of this province. The matting is woven at Canton and in the districts where the reed is cultivated; at Lien-Tan, department of Lo-Ting-Tcheou, and at Tong-Kouang, at the west of Canton. The most beautiful quality is made at Lien-Tan (the reed which is produced in this region being fine and solid); the average quality at Canton, and the inferior quality at Tong-Kouang. The first harvest of reed is effected in the middle of June and July, the second in October and November.

The matting is generally sold in rolls 40 yards in length and 1 yard in width. A variety is made for fire-places in France 7 feet long and 2 feet wide. The kinds of matting and their price per yard are—

	Cents.
Tong-Kouan cargo.....	10½
Contract.....	12
Fine contract.....	14
Imperial	19
Damasked.....	25

For the sum of three-fourths of a cent or more per yard one may obtain a roll of one piece alone, except, perhaps, for the ordinary qualities. The woof of the matting is in large threads of tsing-ma (hemp). There are four varieties of woof in the manufacture of reed matting: Ningpo, large, about one-half inch; Hakchai, three-fourths of an inch; Lien-Tan, 1 inch; mixed, different lengths

	Pounds.
Tong-Kouang cargo.....	55 to 70
Contract.....	70 to 80
Fine contract.....	85 to 90
Imperial.....	95 to 100
Damasked.....	95 to 100

An export duty of 0.2 tael per roll for matting is paid to the customs authorities.

Fire-works.—The workers of Kouang-Tong are reputed very expert. They make at Canton, Tong-Kouan, and Houang-Kong all sorts of pyrotechnics, fire-crackers, large and small, sky-rockets, fuses for burning on the water, roman candles, artificial contrivances of different varieties, spears, sheaves, fuses for war and for signals, etc. The inhabitants of this province have considerable skill for artifices of every kind. A marriage, a burial, a religious ceremony, and a public fête are always accompanied by the bursting of fire-crackers.

Fire-crackers are exported in large quantities to the United States, 70,000 piculs a year at least at a valuation of about 4,000,000 of francs. They are packed in cases of 50 or 60 packages. Each package is wrapped in paper, and contains generally 64 crackers; others are of 72 or 80. Some are called cannons and are 1 foot long and 4 inches in circumference. Indeed all dimensions demanded are made.

The actual prices of fire-crackers at the markets of Canton are: For a pack of 64 fire-crackers, 62 cents; for a pack of 72 fire-crackers, 69 cents; for a pack of 80 fire-crackers, 76 cents.

The native merchants, Chou-Ning and Choeyn-Sun, at Canton, make and prepare pyrotechnics especially for exportation.

Ginger.—Ginger flourishes abundantly and with facility in nearly all the districts of Kouang-Tong. The roots of the plant are an important article of export of this province. They are sent forth in a raw state, preserved, or in a sirup. At Canton two native merchants, Chen-Loong and Man-Loong, are occupied with the preservation of ginger, various sweet meats, and dried fruits, *li-tchi*, etc., intended for foreign exportation. The ginger preserved and dried is sent in small square cases of zinc; that preserved as a sirup in jars of glazed pottery and exported in cases of 6 jars.

The actual price of raw ginger is \$9.50 per picul. The quality called mandarin ginger is put up in barrels and costs \$11.50 per picul. The ginger in stalks sells for \$5 per case; the white label, \$3.50; the red label, \$6.70. The price varies little.

The annual exportation of ginger attains the figures of 14,000 piculs. There is also exported annually not less than 17,000 piculs of preserved ginger and other similar productions, oranges, large and small, prunes, melons, kom-kaua, houan-pe, etc.

This commerce at Canton is almost entirely in the hands of Germans. They export the ginger and other sweet manufactures and the sirup to Hamburg, England, the United States, and Australia.

Paper.—A number of varieties of paper are made in this province of bamboo, *broussonetia papyifera*, rags, the bark of many trees, mulberry leaf, sea-weed, rice-stubble, straw, etc.

The bamboo paper is exported in considerable quantities to England, Holland, France, and India. It is much used in engraving and lithographing. The good quality is fine silky yellowish white. The approximate value is \$1.60 per 10 reams of 100 sheets. The size of the sheet is about 34 centimeters. The shipments are made in cases for the first quality, and for those of the second. The paper from fiber of

Tobacco.—Kouang-Tong is one of the provinces of the Celestial Empire the most productive in tobacco. Almost every family plants some in its garden, and nearly every house is provided with a certain portion. The cultivation is carried on on a grand scale in the department of Nan-Shiung-Tcheou, upon the Pe-Kiang, and in the district of Ho-Chan, at the west of Canton, prefecture of Tchao-Kin-Fou.

The leaf tobacco of Nan-Shiung-Tcheou is called Chen-Nen, and is sold for 24 taels the picul; that of Ho-Chan is known as Tien-Yeh, and costs 23 to 24 taels the picul.

Tobacco is prepared more especially at Canton and at Sin-houei-Shien. The leaves are placed flat, the one on top of the other, and, tied by the stems, are bound in bunches. They are then picked and afterward stripped of their leaves. After being cut the leaf is beaten and flattened, and then, to prevent any loss in strength from the effects of dessication and to insure smoothness for small and regular cutting, it is moistened with an oily substance, in which is sometimes thrown a light solution of opium. At Canton not only the tobacco of Kouang-Tong is prepared, but also that imported at Fo-Kien and other provinces. The importation of tobacco in leaf in this port is 14,500 piculs per annum on an average. At Canton and Sin-houei-Shien seven different qualities of tobacco are prepared at the following prices per catty:

	Taels.
Tin-Chou	1.40
Chan-Chou	1.40
Eul-Chou	1.00
Tin-K'in	2.40
Pei-K'in	1.60
Chan-K'in.....	1.20
Houang-Yen.....	1.80

These tobaccos are generally of a yellowish brown color and cut in very close fibers. They are sweet and their odor is slight and sufficiently agreeable. They are smoked in water-pipes. The inhabitants of Kouang-Tong consume an enormous quantity of tobacco. It is estimated that of 100 men and women 70 or 80 are smokers.

In the market of Canton tobacco may be bought from many dealers. The exportation from this port of tobacco by steam-ship alone annually approximates: Prepared, 18,000 piculs, 250,000 taels; in leaf, 1,500 piculs, 8,000 taels.

From Swatow not more than 20,000 piculs per annum, at a value of 550,000 taels, are exported, but for the most part this tobacco is sold at Fo-Kien.

The island of Hai-Nan produces tobacco in a quantity sufficient for its consumption, and 700 or 800 piculs are exported each year.

Soya.—Soya (in Chinese Cheu-Yeu) is a seasoning made with uncooked black beans allowed to ferment. It is a yellow brown liquid. The Cheu-Yeu of first quality costs, at Canton, \$5 per picul; the second quality, \$4.50. Two sorts of soya are distinguished, the Pe-You, which is less deep in color, clearer, and of which the price is \$2 to \$3; the Tch'ou-You, which is a soya of superior quality, made from the first fermentation, selling at \$6 to \$7 per picul.

The native consumption of soya is enormous. It is a condiment indispensable in Chinese cooking. This article has been for a long time regularly exported to England and the United States. It enters into the composition of all the sauces designated as English. It is also used alone and can be found at most of the groceries of London.

Soya is made for exportation at Honan and Canton, and each year there is exported from this port many thousands of piculs. The export duty is 0.4 taels per picul.

Products of dye-stuffs.—Indigo (in Chinese, lan-tien) flourishes in most of the districts of this province, but more particularly in Kouang Si, where the indigo is of a fine quality.

Kouang-Tong produces also the curcuma, the price of which varies between \$5.50 and \$7 a picul, the wai-fa (in the language of the mandarins, houei-haa), which is a seed similar to the anise, and employed to dye in yellow. The average price is \$5 to \$7 the picul. In the markets of Canton the gall-nut, which sells at \$19 the picul, the Prussian blue, vermillion, the price of which is \$52 per box of 100 catties, the saffron, the red wood, cochineal, gamboge, etc., are also found.

The Chinese now use much of the aniline colors for coloring their silks and cotton stuffs. The importation of this article increases each year.

Medicinal plants and drugs.—There are sent out from this province a very great number of medicinal plants and pharmaceutical drugs, much coming from Yan-Nam, from Se-Tchouen, and from Kouang-Si. Canton exports per year more than 25,000 piculs of articles classed as drugs, at an approximate value of 140,000 taels.

The products of this species, more especially in the province of Canton, and of which the exportation to foreign lands is more considerable, are the China root and galanga.

The China root (Chinese smilax) is a sort of sarsaparilla, of which the root (in English China root) is knotty, hard, compact, and reddish brown in color. It is employed in the pharmacies in Europe and in India. This root is placed in sacks and sold at \$3 and \$5 per 100 catties. From the port of Canton there are exported each year not less than 4,000 piculs.

The galanga of China is sent more particularly to India. It is an active stimulant of piquant flavor and aromatic. The price does not exceed \$2 per picul.

The markets of Canton, Pakhoi, and Macao furnish for exportation the cantharides, the value of which is \$70 the 100 pounds and essential oils of crushed anise, cinnamon, mint, and sental.

Articles of Canton.—Under the leading articles of Canton are classed generally divers productions for exportation, such as canes, furniture, in black carved wood, porcelains and potteries, lacquer, fans, worked ivory, Chinese ink, copper buttons, native rattan, cotton stuffs, jewelry of gold, worked silver, lamps, mirrors, etc.

Equally with articles of greater importance it is well to take note in the first place of canes of all classes, the exportation of which to Europe and the United States is very considerable. They are used for walking-canes, sticks for umbrellas and parasols, tubes for pipes, and for small articles of furniture. Seven sorts of canes are sold in the market of Canton.

We give the following indication of the weight in pounds of packages of 100 and the price in dollars per 1,000 of the varieties most in demand.

Tinglees.—Ten to 60 pounds, at \$4 to \$6; more sought after than all the other varieties, similar to the canes of Tonkin, but more solid and redder, used for parasols, etc.

Partridges.—Eighteen to 48 pounds, \$15 to \$35; wood solid, unlike bamboo, and almost black.

Black bamboo.—Eight to 100 pounds, \$7 to \$70. The demand is active, but the production is not considerable.

Tea wood.—(Not sold by weight) \$33 to \$35; cane sound, heavy; bark brown, covered with short thorns. The demand is regular, but of little importance.

Wingees.—Eight to 23 pounds, \$20 to \$40; canes flexible, with knots short and prominent, employed for walking-canes; demand feeble and uncertain.

Pataos.—Thirty pounds, \$20 to \$25; similar to yellow bamboo, but with the knots very close to the roots; demand of little importance.

Dees heads.—Twenty pounds, \$20 to \$25; small cane of the kind of tinglees, but having

As products for exportation of Kouang-Tong and of Hainan might also be mentioned the pulp of the orange, hides, hogs, artificial flowers, horns of stags, oxen and buffalo, horses, leather trunks, etc.

DE BEZAURE,

The Consul of France at Canton.

RELATIVE ADVANTAGES OF THE RAILWAYS AND WATER-WAYS OF GERMANY.

[Translated from the Bulletin du Ministère des Travaux Publics, November, 1887, and published in the Journal of the Royal Statistical Society, June, 1888.]

M. Todt, of Cologne, has recently issued a very valuable publication containing much interesting statistical information and many original views upon the question of the traffic on water-ways and railways in Germany. It deals also with the question of competition between the latter and internal navigation. M. Todt says:

Public opinion in Germany has, for some considerable time, been preoccupied with the question of the favorable influence that might, from the point of view of the lowering of the prime cost and selling prices, be exercised by the development of navigable water-ways. This question has, to some extent, forced itself upon public notice and attracted general attention through the approaching execution of the works in connection with the canal from the Rhine to Ems, also of the canal from the North Sea to the Baltic, and the canalization of the Spree. To these projected improvements, improvements which, to some extent, are actually decided upon, may be added many others, among them being the canalization of the Moselle, the junction of the canal from the Rhine to the Meuse, the canalization of the Ruhr, the lengthening up to Ruhrort and Duisburg of the canal from Ems to the Rhine, the deepening of the Rhine upward towards Cologne, the junction of this river with the Weser and the Elbe, and the improvement of the Oder between Cassel and the mouth of the Niesse. If these improvements were effectually carried out they would constitute a kind of vast artificial net-work over which goods would be transported at a much lower rate than they are at present. The economy thus realized would inevitably tell upon the selling prices, and would open up new outlets for German products.

To the objection that the desired improvements would weigh very heavily upon the finances, at first by the interest and repayment of the capital engaged, and afterwards by the depreciation that the railways would suffer, the reply is made that the navigable ways would assure the development of the mineral and forest wealth now lying idle or insufficiently cultivated; moreover, it is urged that merchandise that could be carried by canals and rivers in preference to the railways are raw materials of small value, which, being carried at a low rate, do not constitute a remunerative traffic.

Those in favor of the development of water-ways rely, besides, upon the enormous increase which for some years has been noticeable in the movement of shipping. From 1840 to 1883 the quantity of goods passed at the custom-house at Emmerich (entrance of the Rhine in Holland) has increased from 381,000 to 4,500,000 tons. At Hamburg, during the period 1857-'60 to 1885, it increased from 500,000 to 2,400,000 tons; at Breslau (1880 to 1885),

general movement, and that in spite of the development of the railway system. It is from this fact that the partisans of canal development draw the most favorable conclusions.

Unfortunately the information available as regards the question of the actual traffic upon the water-ways in Germany leaves much to be desired from the point of view of statistical accuracy, and in this respect compares unfavorably with the same data relating to the various railways. They show in arrivals and departures the movement at the principal ports, and by dividing by 2 the sum of these figures we are enabled to arrive at an estimate of the average traffic on the navigable ways. The origin and destination of the goods are, however, unknown, as is also the distance traversed. The traffic at the intermediate ports is also an unknown quantity. Certain important places, Breslau for example, are absolutely unprovided with the means of collecting statistical data.

The following is an estimate of the quantity of goods carried over the German navigable ways in 1884: Basin of East Prussia, Niemen, Vistula, Pregel, and Passarge, 2,227,000; basin of the Oder, 861,000; basin of the Elbe, 7,767,000; basin of the Weser, 218,000; basin of the Ems, 176,000; basin of the Rhine, 7,565,000; Lake of Constance, 338,000, and the Danube, 210,000 tons, making in all, including the small coasting trade of Frisches and Curisches Hoff, a total of 19,362,000 tons.

It will be seen that the basin of the Elbe holds the first rank, that of the Rhine coming next in the order of importance. The principal traffic upon the Dutch Rhine appears to be shown at the custom-house at Emmerich, the clearances amounting to 2,702,000, and the entries to 1,958,000, making in the aggregate 4,660,000 tons. On the Elbe, at Schandau, it amounts to 1,821,000 and at Hamburg, 2,630,000 tons.

If the trade from abroad were deducted, as well as on the Elbe, the movement at Hamburg corresponding to the movement of the Dutch Rhine ports, we arrive at the following result as showing the traffic for the basin of the Elbe, 5,252,000 tons, and for the Rhine, 4,840,000 tons. The comparison of the two rivers gives somewhat different results, if only the principal arteries are concerned and excluding the subsidiary or feeding lines, for we then find the following results: For the Elbe, 3,712,000 tons, and for the Rhine, 5,960,000 tons. The tributaries of the Elbe show a total higher than that of the river itself, viz, 3,765,000 tons, while the traffic on the Rhine only amounts to 1,040,000 tons. It is Berlin, with its river movement of 3,723,000, made up of 3,085,000 tons entrances, and 273,000 tons clearances, and 365,000 tons transit trade, a movement exceeding in importance that at the port of Hamburg, which gives to the tributaries of the

the total. It is only the rafts which are of any importance on the water-ways of eastern and western Prussia. The Weser, Ems, and Danube hold the last rank. The movement of shipping is even relatively greater on the Lake of Constance than on these streams, but this may be accounted for by the fact that this lake constitutes, it may almost be said, an extension of the railways which abut upon it. Of the water-ways of eastern and western Prussia, the Niemen and the Vistula are the only ones the length of which is of any importance, but the misfortune is that the course of these streams in German territory is not a very extended one, and the foreign countries through which they flow are not sufficiently advanced, as regards their natural and industrial products, to justify them in devoting any considerable sums to the improvement and development of these ways of communication.

The traffic on the navigable streams of North Germany is of very much greater importance than that of South Germany, as the following table will show :

North Germany :	Tons (including rafts).
Basins of the Niemen, Vistula, Passarge, and Pregel.....	2,227,000
Basin of the Oder.....	861,000
Basin of the Elbe.....	7,767,000
Basins of the Weser and Ems.....	394,000
Total	<u>11,249,000</u>
South Germany :	
Lake of Constance.....	338,000
Basin of the Danube	210,000
Total	<u>548,000</u>

As regards the navigation of the Rhine it should count for about two-thirds in the river navigation of the north to one-third of that of the south. On the lower Rhine the returns of the clearances at Bonn show a total of 5,000,000 tons, while the entrances amount to 2,500,000. It is the ports of Ruhrort, of Duisburg, and Hochfeld, as well as the transit of goods from or for Holland, which assure to the lower Rhine its pre-eminence. The southern ports, Mayence, Gustavsburg, Mannheim, and Ludwigshafen remain in the background, although the most important tributaries, the Sarre and the canal from the Marne to the Rhine, belong to the southern portion of the basin. The traffic of the Main is almost exclusively composed of rafts. In the basin of the Rhine there is no canal or subsidiary line to be compared to the Havel or to the Spree.

The total weight of goods carried amounts to 16,500,000 tons for North Germany and 3,000,000 for South Germany. If we compare East and West Germany, it will be found that the former has the predominance, thanks to the Elbe and to the water-ways of East Prussia, the traffic amounting to 11,000,000 of tons, while for the west, with the Rhine, Weser, Ems, Danube,

The important part taken by North and East Germany in river and canal traffic is due to the greater development of the navigable ways in that flat region where the water-ways offer exceptional facilities for navigation, while the water-courses of the south suffer the double disadvantages of too rapid descent and an insufficiency of depth.

Charles von Scherzer, in his work entitled the "Economic Life of Nations," estimates at 15,897 miles the length of the navigable ways (rivers and canals) of Germany; but this figure has only a theoretical value; it includes, in fact, a vast number of water-ways of a purely nominal importance as regards shipping, and on which there is an almost entire absence of traffic. If only those water-ways are considered on which transportation is regularly effected, and which in themselves count for more than nine-tenths of the general movement, the total length of the navigable ways is immeasurably inferior to the above estimate, and may be approximately stated as follows:

	Miles.
Water-ways of East and West Russia.....	372
Basin of the Oder.....	497
Basin of the Elbe.....	870
Basin of the Weser.....	280
Basin of the Ems.....	186
Basin of the Rhine.....	931
Basin of the Danube.....	248
Total.....	3,384

What is carried by waters other than the above is only of secondary importance, the rafts alone being worthy of mention; and even out of the 3,000 miles mentioned above there are some considerable extents which contribute little or nothing to the general movement. Of the 19,500,000 tons circulating on the German rivers and canals 17,000,000 or 18,000,000 are carried over an extent of less than 2,500 miles, as the following will show:

	Miles.
Water-ways of East and West Prussia.....	370
Oder.....	370
Elbe.....	870
Rhine.....	750
Total.....	2,360

In the basins of the Elbe and the Rhine a traffic of 13,000,000 tons is concentrated over an extent of 990 miles, 250 of which for the basin of the Rhine, and 740 miles for the basin of the Elbe.

So far as concerns the river and canal fleet, and the comparison of sailing means conclusive, as no

Basins.	Sailing.			Steam.		
	Number.	Total tonnage.	Average tonnage per vessel.	Number.	Total tonnage.	Average tonnage per vessel.
		<i>Tons.</i>	<i>Tons.</i>		<i>Tons.</i>	<i>Tons.</i>
Vistula	675	58,000	86.6	43	1,800	44
Oder.....	2,904	240,000	88.8	102	2,600	30
Elbe	9,000	760,000	84.4	338	13,250	52
Rhine.....	2,500	426,000	171.0	199	10,876	76
Rhine (including foreign boats).....	4,767	870,000	180.0	467	20,000	42
Total (including other water-ways).....	17,885	1,625,000	90.0	830	33,000	53

The total tonnage, therefore, of the German river fleet is 1,658,000 metrical tons, or 1,242,000 tons Moorsom. It is equal, in fact, to the merchant navy, the tonnage of which amounted in 1882 to 1,194,000 tons Moorsom, and in 1885 to 1,294,000; but, on the other hand, the mercantile steam navy amounted, in 1882, to 251,000 tons Moorsom, while the corresponding tonnage of the river and canal fleet only reached 33,000 tons. If we take 4 sailing tons as being equivalent to 1 ton steam, which is by no means an overestimate, we arrive at the following results for the German mercantile navy: In 1882, 1,947,000 tons Moorsom; 1885, 2,535,000, Moorsom, while the total tonnage of the river fleet in 1882 was only 1,240,000 tons Moorsom. The comparison, however, is defective on two points. In the first place, in the river fleet are included the coasting boats of Frisches and Curisches Hoff, which have an average burden of at least 10 tons (7.5 tons Moorsom), so that the total strength appears greater than it would be if only the river fleet, properly so called, were taken into consideration. Again, the advantages derived from the use of steam in internal navigation and in maritime transport do not readily admit of any comparison. Steam, when employed in towing on rivers and canals, renders more important services than the actual tonnage of the tugs would lead one to suppose. Consequently the part taken by it in internal transport is of far greater importance than would appear to be shown by the preceding figures.

The number of steamers employed in the transport of merchandise, including steam-boats, kedges, and tugs, is distributed as follows over the German water-ways:

Streams.	Number of steam-boats.	Indicated horse-power.	
		Per boat.	Total.
Vistula	21	70	1,470
Oder.....			

As regards the number of horse-power, the Rhine takes the lead, and this is only natural, seeing that foreign boats are much more frequently found on that river than on the Elbe. On the Rhine, also, it is found expedient to employ boats both larger and more powerful than on other rivers. Taking the average, there are to each horse-power 625 tons carried on the Vistula, 170 on the Oder, 333 on the Elbe, and 190 on the Rhine.

The figures relating to the Oder have only an insignificant value, on account of the defective organization of the statistical service on this river. The comparison between the Elbe and the Rhine turns in favor of the latter. On the Rhine only a very small proportion of goods escapes steam traction, and these are principally stones and minerals descending the stream. On the Elbe there are considerable quantities of goods which do not take advantage of steam traction, going down the river. On the tributaries of the Elbe, Havel, and Spree sailing-vessels and barges predominate.

As regards the nature of the goods carried, the following results, in thousands of tons, are shown:

Articles.	Water-ways of East and West Prussia.	Basins.				Total.	Proportion per cent. of total weight of goods carried.	
		Of the Oder.	Of the Elbe.	Of the Rhine.	Of other streams.		Rafts included.	Rafts excluded.
		Tons.	Tons.	Tons.	Tons.	Tons.	Per cent.	Per cent.
Coal, coke, etc.....	226	240	1,416	3,600	24	5,506	28.5	32.5
Timber	1,200	260	850	730	225	3,265	16.9	5.1
Stones	128	63	1,400	530	134	2,255	11.6	13.3
Cereals, etc.....	143	35	800	890	125	1,993	10.3	11.8
Minerals		2	9	393	8	412	2.1	2.4
Metals	31	58	205	310	31	635	3.3	3.8
Mineral oils	17	27	230	93	14	381	2.0	2.3
Cement, lime, etc.....	17	8	720	293	27	1,065	5.5	6.3
Sugar.....	16	32	489	54	6	597	3.1	3.5
Total	1,778	725	6,119	6,893	594	6,109	83.3	81.0

It is coal and coke (28 per cent.) which constitute the most important part of the transports. On the Rhine these articles comprise almost the half of the total movement (3,600,000 tons); these are also of some importance on the Oder, where, with a total movement of 240,000 tons, these articles represent 27 per cent. of the traffic. On the Elbe they only count for 18 per cent. of the total traffic. Timber takes the second place, but its importance as an article of transport diminishes when traveling from east to west to north. Stone and building materials form a considerable part of the traffic, this being accounted

principally found on the Rhine, the Elbe, and the Oder, zinc predominating on the latter. Petroleum and mineral and vegetable oils belong more particularly to the basin of the Elbe.

Taking the trade of each stream, the articles enumerated above are distributed in the following proportions :

Articles.	Water-ways of East and West Prussia.	Oder.	Elbe.	Rhine.
	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
Coal, coke, etc.....	10.1	27.0	18.0	47.0
Timber.....	53.0	30.0	10.9	9.6
Stones	5.7	7.3	18.0	7.0
Cereals, etc.....	6.4	4.0	10.3	11.7
Minerals		0.2	0.1	5.2
Metals	1.4	6.7	2.6	4.0
Mineral oils.....	0.7	3.1	3.0	0.7
Cement, lime, etc.....	0.8	1.7	8.3	3.1
Sugar	0.7	3.7	7.0	0.7

Of articles other than the above there is nothing of any great importance with the exception of colonial produce, tar, pitch, resins of all kinds, asphalt, salted herrings, alcohol, and wool, the two latter articles appearing principally in the basins of the Elbe and the Oder. Coal, timber, stone, grain, earth, minerals, lime, and cement form by themselves more than three-fourths of the total weight of goods carried over the German water-ways, making an aggregate weight of 14,500,000 tons, or a proportion of 75 per cent. Leaving out what is carried by rafts, there remains a total of 12,000,000, or 71 per cent. Iron, metals, petroleum, and sugar count for 10 per cent. in the composition of the remainder of the traffic.

The following statement shows the traffic on the German railways in the year 1886 :

	Tons.	Per cent.
Coal and coke.....	51,888,000	= 48.5
Timber.....	6,220,000	= 5.8
Stone.....	8,101,000	= 7.5
Grain.....	6,704,000	= 6.2
Minerals.....	4,376,000	= 4.0
Iron.....	6,766,000	= 6.3
Other metals.....	292,000	= 0.3
Petroleum, oils, etc.....	700,000	= 0.6
Cement, lime, etc.....	3,085,000	= 3.8
Sugar, molasses, etc.....	1,537,000	= 1.4
Total.....	90,665,000	= 84.7

The total weight of goods carried over the German railway system in 1884 amounted to 107,000,000 tons, or five and a half times more than the whole water-carriage of the country.

of the railway system, a total of from 30,000,000 to 35,000,000 tons. For the United States the figure would be about 25,000,000 to 30,000,000 tons, and for France about 20,000,000 tons. A comparison, therefore, of the water and railway transports would be more favorable as regards the former in Germany than in England, and the actual result would be almost the same in France as in Germany. M. von Scherzer gives as the actual length of the navigable waters of England 2,980 miles, and the length of the French water-ways as 2,794; the latter figure, however, does not at all agree with the extent, according to the "Guide officiel de la navigation intérieure," this publication giving the length of the rivers as 4,956 miles and of the canals, 2,955 miles, making a total of 7,911 miles. As, however, M. von Scherzer's figures only relate to the water-ways actually available for navigation, it is only necessary to take into consideration those rivers and canals in Germany which are regularly navigated. The length of these ways is about 2,484 miles, with a traffic of at least 18,000,000 tons. In England, therefore, there would be an average traffic of 9,662 tons per mile, in France 7,246 tons, and in Germany the same amount. In the latter country 126,000,000 tons of merchandise are carried by water and rail, the proportion being 15.2 per cent. to 84.8 per cent., respectively, while a considerable part of the traffic has employed both methods of transport. This is particularly noticeable in the mining district of Ruhrort towards the south of Germany, and it appears to be the general rule with the coal cargoes, exception being made of the Sarre coal, which is almost invariably shipped direct without passing over the railway system.

It would be by no means an overestimate to fix at from 8,000,000 to 9,000,000 tons the traffic employing both water and rail. On the Rhine alone over 5,000,000 tons of merchandise are carried in this way. A reference to the subjoined table will show the distribution of the under-mentioned articles over the railways and water-ways, the articles in question representing a proportion of 83.3 per cent. of the transports by water and 84.7 per cent. of those by rail.

Articles.	Total quantity carried.		Proportion to total traffic.		
	By water.	By rail.	Water-ways.	Rail-ways.	Total.
	<i>Tons.</i>	<i>Tons.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>
Coal, coke, etc	5,506,000	51,888,000	4.35	41.18	45.33
Timber	3,265,000	6,220,000	2.59	4.93	7.52
	2,255,000	8,101,000	1.79	6.43	8.22
		6,704,000	1.58	5.32	6.90
					3.79

The goods carried over the various railway systems, amounting in the aggregate to 107,000,000 tons, are distributed over a net-work of 22,000 miles, that is an average of 4,864 tons per mile. The traffic on the waterways, amounting to 19,000,000 tons, spread over an extent of 3,384 miles, gives an average of 5,623 tons per mile. Each ton of goods accomplishes on an average a journey of about 87 miles over the rails.

Inland navigation statistics do not show the length of the various distances traversed, but there appears to be a consensus of opinion that these distances are considerably longer than on the railways. On the Rhine, however, the traffic may be approximately estimated and followed. It comprises (1) the traffic between the Dutch ports and Germany; (2) the traffic between the lower and the middle part of the German Rhine; and (3) the local traffic between the small intermediate ports. This last branch, however, is altogether without importance, and may be left out of consideration. The traffic between Holland and the German ports embraces 4,500,000 tons, and the shortest transport effected is that from Ruhrort-Duisburg to Rotterdam, a distance of 133 miles. Very considerable quantities of merchandise are carried from Rotterdam to Mayence and Mannheim, and it is by this route that the important grain trade of Mannheim and Ludwigshafen is carried on. The shipments from the ports of the Lower Rhine are partly consigned to Dutch or Belgian districts and partly to Mayence, Gustavsburg, Mannheim, and Ludwigshafen; the intermediate districts—Cologne, Coblenz, etc.—retaining very little of the traffic. The greater part, therefore, of the transports on the Rhine are effected over an extent of from 125 to 350 miles, of which 125 miles are comprised within German territory.

The 3,250,000 tons of coal shipped from the ports of Ruhrort, Duisburg, and Hochfeld in 1884 comprised 1,375,000 tons for Holland and 800,000 tons for Mayence and Mannheim. It follows, therefore, that there was an average distance of 120 miles traversed on German waters, while, on the other hand, the railways carried goods to a distance varying between 5 and 30 miles, or an average of 17 miles. On the Elbe the comparison is equally in favor of water transport. From the Austro-German frontier to Hamburg the distance is 404 miles, from Hamburg to Dresden 360 miles, from Hamburg to Magdeburg 186 miles, and from Hamburg to Berlin 248 miles. A considerable proportion of the goods passing the frontier descends the Elbe as far as Hamburg; 366,000 tons of lignite from Bohemia have penetrated as far as Magdeburg (217 miles), and 211,000 tons to the Havel (248 miles). In the contrary direction almost all the consignments from Hamburg (1,400,000 tons) were in the direction of Berlin and the Oder, or towards Magdeburg, Dresden, and Bohemia.

A considerable proportion of the traffic of the Havel and the Spree was effected over very short distances. Building materials, &c.

said of the grain, vegetables, seeds, coal, coke, etc., forwarded to that destination. The average distance that goods are carried on the basin of the Elbe may be approximately estimated at 124 miles, while the distance is considerably greater on the basin of the Oder, since the principal traffic is between Breslau and Stettin (347 miles), Breslau and the basin of the Elbe, and Stettin and Berlin (130 miles). For water-carriage, therefore, the average difference traversed may be taken as at least double that of railway transport, which is in itself a proof that even the nature of the navigable ways renders them more suitable for long journeys.

It results from the foregoing that from the point of view of the distance traversed, inland navigation in Germany is of far greater importance than the tonnage returns and the comparison of these returns with those of the railways would appear to show.

The following tabular statement shows a comparison of the two modes of transport for a certain number of principal cities:

Cities.	Number of inhabitants.	Goods carried.			Number of tons per head of population.
		By rail.	By water.	Total.	
		<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>
Berlin	1,200,000	3,504,000	3,348,000	6,852,000	5.71
Breslau.....	270,000	1,237,000	350,000	1,587,000	5.88
Hamburg.....	410,000	1,191,000	*3,221,000	4,442,000	10.7
Magdeburg (including Buckau and Neustadt)	165,000	1,650,000	1,118,000	2,768,000	16.7
Dresden.....	220,000	†1,411,000	534,000	1,945,000	8.8
Bremen.....	112,000	776,000	*184,000	960,000	8.5
Ports of the Rhine (Ruhrort, Duisburg, and Hochfeld).....	70,000	5,427,000	4,107,000	9,554,000	136.0
Cologne (including Deutz).....	160,000	1,320,000	314,000	1,634,000	10.0
Mannheim and Ludwigshafen.....	75,000	1,776,000	2,041,000	3,817,000	50.0
Leipzig.....	160,000	1,675,000	.....	1,675,000	10.0
Hanover (including Linden)	150,000	912,000	.....	912,000	6.0
Munich.....	230,000	1,252,000	.....	1,252,000	5.4

* Not including sea tonnage.

† Exclusive of arrivals and departures by rail from Dresden and Breslau.

Deduction being made of places such as the ports of the Rhine, Ruhrort, Duisburg, Hochfeld, Mannheim, and Ludwigshafen, which considerably exceed the average by reason of the traffic being entirely in transit, it will be seen that the differences are not of any considerable extent. Magdeburg heads the list, this being an important market; the other cities varying between 5 and 10 tons per inhabitant. It can not be said that places like Hanover, Leipzig, Munich, and Bremen, which almost exclusively, or at any rate, rely on railways, compare, from a general commercial point of view, enough to have

between the two modes of transport as regards the value of the articles carried. Both by rail and water goods of small value preponderate, but this preponderance is much more marked on railways than on water-ways. The latter are not limited in their choice of goods, as is generally supposed; soft goods in bales and articles of value form no inconsiderable part of their transports. The traffic on the Rhine in grain, vegetables, flour, etc., in spite of the favorable conditions under which those goods are carried on German railways, increased from 156,000 tons in 1872 to 810,000 tons in 1883, thus following an ascending scale much more rapid than that which would result normally from the increase of the population in the industrial centers traversed. A similar increase is also observable at the port of Hamburg. During the period comprised between the years 1851-'60 the annual arrivals at Hamburg by the Elbe averaged 206,000 tons of goods, of which 18,700 were in bales, or a proportion of 9 per cent. The departures from Hamburg during the same period averaged 300,000 tons, of which 56,000, or 18 per cent., were in bales, making, together, a total of 506,000 tons, of which 74,700, or 14.7 per cent. were in bales. In 1885 the arrivals amounted to 1,234,000 tons (666,000 tons in bales, or 54 per cent.), and the departures to 1,180,000 tons (474,000 tons in bales, or a proportion of 40 per cent).

It will be observed, then, that the transport of goods in bales, most frequently valuable articles, has shown an increase three times greater than that of the whole river trade of Hamburg. Among the more valuable goods carried by water may be cited mineral oils, and it is to the facilities given, thanks to the Elbe, to the transport of these products that Hamburg has taken the place of Bremen, formerly the first in Germany and in the European continent for petroleum. In 1884 the shipments of mineral oil from Hamburg exceeded by 17,000 tons those from Bremen. In certain ports it happens that valuable goods more frequently take advantage of the water-ways than the railways. Berlin, for instance, received, in 1885, 150,000 tons of cereals and vegetables by rail and 250,000 tons by water; 760 tons of rice by the former, and 2,400 tons by the latter. In the same way Mannheim-Ludwigshafen received, in 1884, 5,000 tons of mineral oil by rail, and 24,000 tons by water and 200 tons of rice by the former and 4,500 by the latter. These examples may be multiplied, and they are sufficient to show (1) that the water-ways, contrary to the general opinion, participate to a considerable extent in the transport of costly merchandise; (2) that this participation has, up to the present, been steadily increasing; (3) that this fact is not to be accounted for solely by the increase in general traffic but by the preference accorded to water-carriage, as it offers greater economy than any other mode of transport; and (4) that this diversion of traffic applies to those articles which have the longest distance to traverse.

The increasingly important part taken by German navigable waterways in the

by the erection of ports and quays at the most important points. The many millions that the German states, commencing with Prussia, have devoted during the last fifty years to the improvement of rivers and streams have had a result the more advantageous as various legislative measures have been passed with a view to lighten the burdens imposed upon river and canal navigation; among others article 54 of the constitution, which removed the taxes hitherto levied upon the fleet for the interest and repayment of the capital engaged.

The tonnage of the river and canal fleet increased in the short space of time between 1877 and 1882 from 1,377,000 tons to 1,658,000 tons; the number of steam-vessels, which in the former year amounted to 463, rose to 830 in 1882, this being the latest year for which any reliable information on this point is available. The average tonnage of the sailing-vessels was as follows for 1872 and 1882: On the Oder, 77 and 89 tons; on the Elbe, 75 and 84; and on the Rhine, 130 and 171 tons.

The facilities afforded to the handling of goods have counted for much in the development of the traffic of the water-ways. By lengthening to a considerable extent the ports and quays, and by erecting powerful machinery, the delays of loading and unloading have been sensibly diminished. The three ports of the lower Rhine, Ruhrort, Duisburg, and Hochfeld, having a length of quay of about 50,000 feet, and abundantly supplied with machinery for loading, steam-cranes, weighing machines, and coal shafts, have an annual traffic of from 4,000,000 to 4,500,000 tons. On the Elbe there are a larger number of ports furnished with the necessary machinery, but these ports have not the same importance as those of the Rhine. Dresden, Riesa, Wallwizhaven, Magdeburg, and Hamburg enjoy these advantages, and are directly connected with the railways. At Hamburg, the most important port on the Elbe, it is of more importance to assure the relations between the sea and river navigation, the requirements of which are very different, than to assure the communications between the river and the railways. The quays and depots of Berlin are quite insufficient for commercial requirements. On the Oder much has been done to place the river in communication with the railway. The most important work is to be found at Breslau, where machinery constructed on the model of that in the Rhine ports has been erected. All these improvements have been effected either by the state, by the communes with state aid, or again by private companies. On the other hand the employment of steam has in some measure been instrumental in regenerating the river and canal navigation. With the old sailing boats the average distance covered per diem was 19 miles at the most, taking contrary winds. The steam towage

assimilated to a regular goods train, and the steam carrier to a direct goods train, it will be found that the speed at which inland navigation is effected is sensibly inferior to that of the railway. A goods train, even when heavily loaded, covers a distance of from 180 to 250 miles in twenty-four hours, while a direct goods train might even cover double this distance. As regards delays in the delivery of goods, canals and rivers compare very favorably with the railways; river navigation is concentrated on a certain number of ways, over which a heavy traffic passes, and is effected between a limited number of important ports, sufficiently distant one from the other. The river and canal navigation, moreover, is but little obliged to stop at night. It is far different with the railways; even on those lines on which the traffic is heaviest account must be taken of the frequent stoppages at the intermediate stations, for loading and unloading goods, coupling or uncoupling trucks, changing engines or men, taking in coal or water, and shunting to allow passenger trains to pass. These different circumstances considerably lengthen the duration of journey by rail. Transport by rail then, as compared with that by water, does not enjoy the advantage that the greater rapidity of traction would assure to it.

The facts which we have enumerated above have in great measure contributed to the development of steam navigation, and have produced this result, that instead of being completely crushed by the competition of the railways, the river and canal fleet has succeeded in taking from the latter a considerable portion of the traffic. The rapidly extending employment of steam as a motive power has given to the traffic of the Rhine and Elbe its present importance, and has stimulated the development of that of the Oder. Where navigation is effected principally by sailing and rowing boats, as, for example, on the Spree and the Havel, only raw materials of small value are carried, such as earth, stone (wrought or unwrought), lime, etc., goods which even going down the Rhine are seldom carried by steam-vessels. Not only has navigation gained in speed, regularity, and continuity by the employment of steam, but it has also made considerable progress from the point of view of cheapness. The initial expenses of building, as well as the working expenses, interest, and repayment of capital, are distributed over a much greater tonnage, so that the actual ton mile corresponds to smaller expenditure for steamers than for sailing vessels. Again, thanks to the use of steam, a vessel can accomplish twice or even three times as great a number of voyages; it may also have much greater carrying capacity; this increase of tonnage, added to the facilities afforded to the loading and unloading of goods, has had the effect of reducing freights by one-fourth, and in some cases by half. The position is the same for maritime navigation, and the fall in the rates of freight has even been accentuated by the stagnation of trade. Of one fact there can be no doubt, that is, that freights have sensibly diminished.

The daily expenses are in the case of the largest steamers at the rate of about 6 pence per ton register. As these steamers cover a distance of from 190 to 250 miles a day the expenses of transport, properly so called, amount to about .03 of a penny per ton and per mile, a figure which, taking into account the stoppages at the various ports, comes to .05 of a penny. Between North America and Germany, a distance of from 3,100 to 3,730 miles, a ton of grain is carried for 10 shillings, or .04 of a penny per mile. In some years, however, the cost is double.

Coal freights between England and the North Sea (434 miles from the east coast of England and 870 miles from the west) rule at about 4s. 10d., or .12 of a penny per ton and per mile. Between the ports of the North Sea, the Prussian and Russian ports of the Baltic (810 and 1,500 miles), they amount to 5 shillings at the most, or from .04 to .08 of a penny per ton per mile.

The fact that river and canal navigation uses the navigable ways free of cost, and has only to provide itself with the means of traction, places it in a position to compete favorably with the railways, provided always that the latter are desirous of paying a dividend. Inland navigation has this in common with the maritime navigation, that the rates of freight are calculated on a much lower basis for long than for short distances; that the possibility of rapidly loading and unloading has a considerable influence on the question, and, finally, that the prospect of a return freight considerably lowers the cost of transport. Consequently the rates attain the minimum when it is a question of two important commercial centers between which there is a regular traffic, and which are supplied with the necessary machinery for loading and unloading. In the matter of river navigation, the time necessary for the transport and for loading and discharging is a very important factor, and its duration exercises a considerable influence upon the rates of freight. As regards steam navigation the rates can be fixed on a firm basis, and deduction being made of free competition to which the different river and canal navigation is subjected, it is the consideration of a return freight which is the controlling element in the variation in the rates of transport by steam between any given ports.

In determining the rates for river and maritime navigation it is not necessary to take into consideration the value of the goods carried, the most complete utilization of the capacity of a vessel being the principal point, it matters little whether it be with coal, sugar, or grain with which it is loaded.

The more or less dangerous character of the goods which plays in maritime navigation a very important part, and which influences in a marked manner the rates of transport, is only a matter of very secondary importance.

is owing to causes essentially commercial. It is that in order to attract this class of goods there is no necessity to make any concessions in the rates of freight. Railway competition is not formidable, and the river and canal fleet, desirous of keeping down the cost of transport of heavy goods, is only glad to be able on occasion to look for and find its compensation in other articles. Finally, river and canal navigation offer three methods of transport with different rates, as follows :

- (1) Transport by steam carriers.
- (2) Transport in barges towed by steam.
- (3) Transport by sailing-ships.

The first is on an average from twice to four times dearer than the second. Navigation by sailing-ships is partly dearer and partly cheaper than towing. It becomes cheaper when it is a question of carrying down the rivers goods of little value which have not to make long journeys, and that is because the use of steam would not prove sufficiently remunerative on account of the shortness of the distance to be traversed, of the current, and the inadequacy of the machinery for unloading. It is, on the other hand, dearer when navigation is effected up stream. As regards the second mode of transport, account must be taken of the composition of the train of barges, and the nature of the boats towed, their dimensions, and the nature of their construction, whether with or without decks, of iron or of wood. By reason of the guarantees of solidity and security afforded by their construction, iron vessels are able to command a higher rate of freight, and moreover, they are better managed.

As we have already observed, the dimensions of the vessels is an important factor in determining the cost of towage. A limited number of large vessels admits of the realization of a more important increase of carrying power than a large number of little boats. An iron lighter of 500 tons burden pays at the most per ton and per mile two-thirds of the cost of towage that a wooden vessel of 100 tons would have to pay.

As far as it is possible to judge, with the perpetual fluctuations in the rates of freight, the inland navigation rates are established, as nearly as possible, according to the following scale :

(a) Goods of every description in bulk, loaded on boats and towed in trains, .18 to .29 of a penny per ton and per mile.

(b) Goods in bales, towed in trains, from .06 to .09 more, or .24 to .38 of a penny per ton and per mile.

(c) Goods in bales carried by steam carriers, .39 of a penny to 1*d.* per ton and per mile. On canals and canalized rivers the tariff may be taken as follows: For class *a*, from .23 to .34 of a penny; for class *b*, from .30 to .48 of a penny, while as regards the third mode of transport this is rarely employed on these water-ways.

for the quick service of trains, there are two general classes of wagons and four special classes, and, moreover, each line of railway has a number of special tariffs. The rates according to the general tariffs vary between .35 of a penny and $4\frac{1}{4}d.$ per ton and per mile; that is from two to four times higher than the rates by water. In the special tariffs the rates range from $2.36d.$ per ton and per mile (for goods in bales) to .57 of a penny (exceptional rates for loads of 10 tons and above). That which constitutes a considerable advantage from a tariff point of view in favor of the navigable ways is the circumstance that these tariffs are not influenced by the value of the goods carried. In the same class will be found such articles as raw iron, minerals, cereals, and petroleum, while for the same description of goods carried by rail the rates would vary from .41 of a penny to $1.16d.$ per ton per mile.

Taking into consideration the fact that the transport of the mass of goods, including heavy bales, can be effected by river navigation at prices varying between .18 and .29 of a penny and by canal and canalized rivers at from .24 to .38 of a penny, it is not surprising that for valuable goods a preference is shown for water over railway transport. The transport of the mass of goods of little value costs on the average by water only half what it does by rail, while on the other hand goods belonging to the class of special wagons, such, for example, as petroleum and refined sugar, or to the special tariff No. 1, such as cereals, and the natural water-ways carry them at about a third or a quarter of the price at which they would be conveyed by rail. Artificial water-ways carry the mass of cheap goods for two-thirds of the regular railway tariff and valuable goods for a third or a half of this tariff.

There is, however, one circumstance which prejudicially effects the cheapness of water transport, that is the necessity which almost invariably exists for the conveyance of the goods for a certain distance over rail or road. In some cases the possibility of carrying the goods up to the very gates of the warehouses themselves is in itself a sufficient reason for the preference to be shown to railways. Again, in the case of coal carried from the Ruhr in the direction of Holland. The places to which it is carried are easily accessible to the river fleet, particularly Rotterdam, Amsterdam, Dordrecht, etc. The freight is low, and, including even the journey by rail, the total cost of transport does not amount to more than 3s. per ton, while by rail all the way the cost would be at least 4s. 2d. per ton, and yet the railways monopolize the greater part of this traffic, owing to their punctuality, particularly in the case of the coal intended for exportation by sea.

The natural water-ways, which, during the greater part of the year, enjoy the advantage of a depth of water sufficient for the navigation of steam-boats, are in a position to favorably compete with the railways as regards the goods

must realize sufficient to pay the interest on the capital engaged. The movement of passengers is barely sufficient to realize an excess of receipts over expenditures, and it is therefore to the goods traffic that the railways look for their profits. For the German railways, the capital of which represents a value of more than £480,000,000, a sum must be found annually equivalent to that which per ton mile carried would represent an expenditure of .40 of a penny, or a sum nearly equal to the cost of traction. To lower this tariff would be to run the risk of serious complications and a certain deficit. Moreover, it would be dangerous to recommend the adoption of measures tending to the augmentation of the cost of water transport through the medium of a navigation tax with a view to a reduction of the advantages of these competing lines. On the Rhine and the Elbe the treaties in force would be a bar to the adoption of such a measure as the above, which, on the other water-ways, would not only prove vexatious, but, moreover, useless. What on the other hand would be a legitimate policy would be not to further undertake on the navigable ways any works other than those of real importance, and the execution of which would insure a sufficient return upon the capital engaged. The cost of transport constitutes an important element in the composition of prices. One of the most important articles, namely, iron (unwrought), has from 20 to 30 per cent. of its cost price represented by the expenses incurred in bringing up coal, ore, and lime; and yet the metallurgical industry is hardly ever found elsewhere than in the vicinity of coal fields and ore beds. It is the same thing with coal, the intrinsic value of which is often lower than the cost of transport, by reason of the exceptional situation of the two basins of the Ruhr and Upper Silesia. It may be taken generally that German coal can be carried a distance of from 110 to 190 miles for 7s. 4d., and 310 miles for 12s. 2d. The railway tariffs fix, for the transport of cereals over an average distance of 500 miles, the rates at from 43 to 50 shillings per ton, or about 30 per cent. of the intrinsic value at the place of production. According to the above one would be almost led to believe that a diminution in the cost of transport would be an economic advantage of the very highest importance, the realization of which should be striven for even at the cost of considerable sacrifices, and yet this is not absolutely the case. Before everything, it is necessary to inquire if the benefits resulting from a lowering of the rates would have a general character, or if, at least, this diminution would benefit the majority of the national interests. If this is not so; if it is not to the advantage of the many, but only of certain groups, circles, and regions, the gain to the one would be the loss of the other, and the economic advantages would be considerably diminished. It may even happen that the disadvantages resulting from it would be greater than the advantages obtained, and that the displacement of commercial currents would have for certain districts disastrous effects, which would not be compensated by the advantages obtained elsewhere.

the agricultural or manufactured products. Maritime navigation has also borne its share in effecting the result to which we have referred. It has, in consequence, found itself under the necessity of giving up the enormous profits that it has been in the habit of making, and of carrying goods at cheap rates hitherto unknown. On the other hand, the minimum tariffs of maritime navigation encourage exportation, and foreign industrial products inundate the markets, where they strive for the first places, forcing the national producers, if they desire to still supply their own consumers, to sell their products at a lower rate than that quoted by their rivals. Those engaged more particularly in the industries of agriculture and sylviculture have followed the example of the industrial nations, and have consigned to the latter their surplus cereals, cattle, and timber in such quantities that the actual requirements are often exceeded; the prices have fallen, and the agricultural and sylvicultural industries of industrial nations have suffered keenly from the competition.

It will be seen, therefore, that the diminution in cost of transport may, under certain circumstances, be productive of more harm than good. In Germany it certainly has had the unfortunate result of entirely nullifying schemes for the effectual protection of national labor.

If we consider the movement of goods carried in one direction or another on the Rhine, Elbe, or Oder, it is difficult to come to any other conclusion than that the traffic of these navigable ways owes a part of its success to circumstances absolutely opposed to the general policy in the matter of exchanges. In 1884 there were brought into the states of the Zollverein 2,775,000 tons of cheese, barley, rye, oats, maize, and vegetables, of which 1,575,000 tons, or 56 per cent. of the total importation, came by the Rhine, the Elbe, and the Oder to Emmerich, Hamburg, and Harburg by the Finow and Schandau Canal. By the Rhine and the Elbe these products were sent away to an extent representing a proportion of 44 per cent. of the total exports.

As regards timber for building purposes 1,946,000 tons came into the Zollverein in 1884 and 593,000 tons left it. The actual part taken by the navigable ways in this traffic can not be absolutely determined from these figures, as some considerable quantity of goods were simply in transit. It may, however, be estimated that the quantity entered by water amounted to 1,126,000 tons, and 218,000 were exported by the same route. The principal imports have been effected by the Vistula (524,000 tons) and the Niemen (500,000 tons), and the exports by the Rhine (124,000 tons) and the Elbe (68,000 tons). The Niemen has principally carried timber in transit, while

has imported the greater part of these cargoes.

double the quantity of that brought by rail, while only considering, as regards this article, the general traffic by navigable water-ways and railways, 3,265,000 tons for the former and 6,220,000 for the latter, we find the proportion absolutely reversed.

The imports and exports of coal and coke during the year 1884, by water and by rail, was as follows :

Articles.	Imports.	Exports.	By water.		By rail.	
			Imports.	Exports.	Imports.	Exports.
	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>
Coal.....	2,296,000	8,816,000	942,000	2,262,000	374,000	6,662,000
Coke	123,000	670,000				
Lignite.....	3,466,000	.....	1,300,000	.....	1,533,000	.....
Total *.....	5,885,000	9,486,000	2,242,000	2,262,000	1,907,000	6,662,000

* The discrepancy between the total of the entrances and of the clearances, and the amounts brought and dispatched by water and land, may be accounted for by the fact that Luyenburg, which is taken as forming part of the Zollverein, is at the same time considered, from a commercial point of view, as a foreign country.

From the above it will be seen that the navigable water-ways have borne the largest share in the importation of coal and coke. Taking, however, the general traffic, the railways have carried ten times more coal and coke than the water-ways, the actual figures being 51,000,000 tons by the former, and 5,000,000 by the latter. The largest imports are effected by the Elbe and the Oder, 40,000 and 430,000 tons respectively, and the Vistula 170,000 tons. The Rhine is employed for the exports to the extent of 2,190,000 tons. In the export of iron the railways count for nine-tenths of the unwrought and five-sixths of the wrought, while the water-ways retain the greater part of the import trade in ores and pig-iron.

For many and valid reasons the navigable ways are more frequently employed for imports than for exports, and looking at the question from the standpoint of the protection of national industry, they are productive of more harm than good. For other industries, the effect they exercise from an export point of view is more favorable ; for example, the sugar industry utilizes them for their consignments abroad almost in the same proportion as the railways. Zinc and lead frequently take advantage of the water-ways for the carriage of their exports, and it is evident that there are many other industries which derive considerable advantage from the cheapness of the transport and their favorable position upon the water-ways.

And yet, in face of the statistics we have quoted, it is almost impossible not to recognize the fact that the general opinion as to the value of water-ways as an instrument of wealth proceeds partly from erroneous ideas, and

undoubtedly some show of reason in the numerous arguments at present put forward in favor of the advantages to be derived from the various canals, the execution of which is so anxiously demanded. The establishment of these new ways ought, we are told, to reduce the cost and selling prices to a rate impossible to be attained by the railways, and thereby would powerfully stimulate the national industry. Undoubtedly the canal from the Baltic to the Ems, with a junction to the canal from the North Sea to the Rhine, as well as the canal from the Oder to the Spree, would be productive of all the advantages attributed to it, and even without detrimentally affecting the higher interests of the country. By the first of these ways the basin of the Ruhr would very speedily find the facilities for placing goods on the German markets of the littoral, and also in the Russian and Scandinavian ports, and for export generally greatly increased. And, besides, all the operations of import and export, as regards the industries of the Ruhr, would be effected by German in preference to foreign ports. The canal from the Oder to the Spree—the national result of the improvement of the Oder—will give to the industries of Upper Silesia the navigable way of access to Berlin, the want of which has been so long felt.

But, on the other hand, the advantages anticipated from the establishment of a number of other ways are either insignificant or absolutely counterbalanced by such serious economic disadvantages to such a degree that one is forced to seriously inquire whether it is for the general interests that these works should be undertaken, and, if undertaken, whether it should be with state aid. In this connection we may mention the canalization of the Moselle from Metz to its mouth, a canalization ardently desired by those interested in the industries of the Ruhr. The work would have for its object the transformation of a river which suffers particularly from an insufficiency of water, and the rendering of it capable of accommodating the largest Rhine boats, even those with a burden of 500 to 1,000 tons and having a draft of water of from 5 to 6 feet. The transformation would be effected by the aid of important works, consisting principally of locks; in fact, the proposal is to distribute thirty-two locks over a distance (in round numbers) of 200 miles. It would appear, however, that the hopes founded by the industries of the Ruhr upon the canalization of the Moselle are illusory, and, by reason of the doubtful success of the project, the Government would do well to seriously consider whether the national finances should be devoted to such an enterprise.

In the bill of July 9, 1886, respecting the construction of fresh waterways, it was the junction of the Rhine with the Weser and the Elbe and the *towards Breslau* that was in question. In the *from the*

provement of the Oder towards Breslau would consist in the canalization of that part comprised between Breslau and Kosel (about 93 miles), which would bring the industries of Upper Silesia nearer to Breslau by 74 miles.

As regards the question of the importance of artificial water-ways, there is very little doubt that as soon as these latter cease to be short links, intended to connect between themselves the different systems of natural water-ways (for example, the junction of the Oder with the Havel and the Spree), but constitute important lines, with their own individuality, they can not compete, as regards the cheapness of transport, with the natural water-ways, even if the state be disposed to cover, by the imposition of taxation, the cost of maintenance.

The natural lacuna in the matter of traffic by water would be less satisfactorily filled by the opening of an artificial way than by the establishment of a railway. Moreover, artificial ways have a much greater difficulty in adapting themselves to local circumstances. As a matter of fact, the principal sources of traffic—the industrial regions with their mines and minerals—are more frequently far from being favorable to the establishment on the spot of navigable ways. Traffic by water has, therefore, a natural propensity to concentrate itself in certain regions even more so than the traffic by rail.

To sum up, public opinion, in its infatuation for canals and improvements of natural water-ways, does not take sufficiently into account the true influence that navigable ways may exercise upon the economic condition of the country. The happy effects that one has a right to expect from the opening of these ways upon the development of public prosperity are frequently nullified by the obstacles placed in the way of the production of certain basins. It may be laid down as a general rule that it is rather importation than exportation that is benefited. These two circumstances, properly appreciated, considerably diminish the economic value of a certain number of water-ways, the execution of which appears to be so ardently desired.

RAILWAY PROJECTS IN ECUADOR.

In 1885 the Government made a contract for the construction of a section of railway from Chimbo to Sibambe, 50 miles in length, an extension of a railroad built some fifteen years ago by the Government from Yaguache, the head of navigation of a river of the same name, to Chimbo. For the construction of this extension the Government granted to the contractor, for twelve years, the income derived by it from the monopoly of the sale of salt in the Republic, amounting to 200,000 sucres* annually, and the right to the use for his own benefit of the whole line for twenty-five years, he agreeing to complete the extension in four years. This year the contractor assigned his contract to a company of this city known as the Railway and Public Works Company, which is now engaged in making the project of a railway from

of any part of the road. The direction from Yaguache to Chimbo is north, and from Chimbo to Sibambe east. From Yaguache, 25 miles by northeast of this city, to Chimbo, the road passes through a fertile country, only sparsely populated, the chief products of which are sugar and rice. Several large sugar estates and a few small cocoa plantations are on the line of the road. The population is almost exclusively agricultural. From Chimbo to Sibambe, the terminal point contracted for, the road will pass through a mountainous region for the greater part of the distance, reaching at Sibambe an elevation of 7,500 feet. The country to be tapped by this section produces cattle, wheat, barley, and in fact most of the cereals and vegetables of the temperate zones, but the population is sparse, composed mostly of Indians, who are very poor and ignorant, though peaceable and laborious. The land is fertile and capable of yielding abundant harvests.

Last year the Government granted a concession for a railway from Duran, a point across the river and nearly opposite Guayaquil, to Yaguache, 14 miles west by land, to connect at that place with the road to Chimbo. For this the contractor is to receive from the Government 20,000 sucres a mile, and to enjoy the free use of the road for twenty years, at the expiration of which term it is to become the property of the Government; until then the Government will have no share in its management. Work has been progressing for the past year, and it is expected that the road will be open for traffic in December next. It runs through a low, flat region of country, devoted principally to the pasture of cattle and abounding in tropical fruits. The population is sparse and composed mainly of Cholos, a mixture of white and Indian, who bring the vegetable and fruit supplies to this city.

With the completion of the two lines or sections there will be a railway of 96 miles, connecting Guayaquil and Sibambe (the latter a town of 2,000 or 3,000 inhabitants), and from thence there is a wagon road north to Quito, but it is much out of repair, and no wagon, I believe, has ever passed over it. There is some remote probability of an attempt, after the line reaches Sibambe, to continue the railroad to Quito.

A concession and subvention were last year granted for a railroad from Bahia de Carequez, a port on the Pacific, to Quito, about 280 miles east of the proposed line, the person undertaking to build the road to receive the net income of the custom-houses at Bahia and Monta, amounting to 70,000 sucres a year, for ninety-nine years, and to have the use of the road for the same period. The Government is to have no share in its management. For some 30 miles from Bahia eastward the projected road is through a level, flat country. Afterwards it enters the Andes and passes through a mountainous country. Some little grading has been done near Bahia, and it is not likely

LABOR COST OF LADIES' BUTTON BOOTS IN EUROPE AND AMERICA.

Whoever has gone through a Massachusetts shoe factory with open eyes to observe its workings surely leaves it with a useful lesson learnt. Especially so when in his younger days he made good use of the easy opportunity and watched the shoe-maker at his daily work. He will remember how the latter beat out his sole leather, cut his soles, the heels, and, from a well-selected side, the uppers, etc. After all the preliminary work had been done, how the twine was doubled till it reached the proper thickness, then how he twisted it and, suspending it on a hook on the doorpost, waxed it, the fastening at the ends of the bristles, then the laborious way of stitching with his awls in hands, the finishing, smoothing of the soles with the sharp edge of a piece of broken glass, the burnishing, the polishing, etc., and all the different operations necessary in the making of a pair of boots out of a few pieces of leather, how all this was performed by one and the same master hand. What a skillful man the shoe-maker was in his eyes. But now, if he compares this with the American factory method, this mode of working, handed down by the craft for thousands of years, perhaps, what an object lesson of development, evolution, and revolution in the industries and arts, taken place within one short generation, presents itself to him by comparisons in this single industry. To examine an American shoe factory is, indeed, the examination of the complete emancipation of labor from any exercise of muscular power directly upon the work. The hand is only used, except in the cutting and hand-lasting, to direct a mechanism, which does all the work which used to be done in former times in the manner stated above. The mechanism itself is set and kept in motion by steam power. To the operative nothing is left but to direct the work. Great is the attention required, swift are the motions to complete a vast amount of work in a very short time with correctness and neatness. No time is left for repairs of bad work. If so, it goes out of the time, the earnings of the work people. Nor is time left to think out poetry of the Hans Sachs, nor mystic transcendentalism of the Jacob Boehm style. Dreamland has no corner left in a Massachusetts shoe factory. If it had, the operative retiring to it while working would soon wake up with a finger caught in a machine. Manifold as are the operations a shoe has to go through till it is finished and ready for use, yet, even in a large factory, very few do the same work which their neighbors do. Every one of the scores of hands through which a shoe has to go till its completion is doing a different part. In the cutting, perhaps a half dozen different parties are employed in cutting the different parts, the soles, heels, uppers, linings, etc. In the sewing of the uppers, the joinings are all made by different operatives. So with the lasting, soling, heeling, burnish-

being sewed on by machines. So that there is practically nothing left but very close attention and exercise of nerve power, for hours and hours follow the same rapid monotony, but monotony which leaves no chance to go to sleep over. Such, it may safely be said, is the system of work, minutest subdivision of labor, and application of machinery to every branch of work which characterizes the manufacture of boots and shoes in the United States. Work done on any other principle, except for custom trade, could not maintain itself for an hour under the fierce competition in the trade in America.

If we then go away from America to Europe and examine into the working methods there, we take with us another very instructive lesson. It is, that if two do the same thing it is not the same thing, and if two nations make boots and shoes by machinery it is not the same thing either. Here, more than in anything else, we see all the differences in the manners, customs, and habits of the working people manifest themselves. We see how different, indeed, are the ways in which even the same machinery is set to work by different nations and how different the results from its employment. How all the phlegm and want of energy, perhaps due to want of encouragement of the European working classes, is manifested there and in the results when compared with the work and the prodigious output of their American brothers and sisters. Of this phase I shall speak with greater detail, when I come to deal with the different countries where boots and shoes are made by the aid of machinery, and where I have been able to collect data on the subject.

Before setting out on the inquiry I provided myself from an American factory with samples of ladies' button boots of two qualities; one made in Lynn, Mass., and the other representing a slightly inferior quality, corresponding to boots made in country shops, and ranging at somewhat lower prices. I will call the higher grade No. 1, and the cheaper one No. 2. The first sells at the factory at \$1.70, and the other grade at \$1.35 per pair. The first quality is more stylishly made and has more fancy work, but as to quality and wearing character the difference is not very pronounced. In every instance where I showed my samples to manufacturers in foreign countries they were subjects of praise so far as workmanship or general appearance is concerned if put side by side with their own makes. As to price of goods and labor cost, further on.

A. — THE AMERICAN GOODS.

The work vided into the part relating to the uppers and of bottom-
finishing. The work in the uppers is paid by the dozen pairs, and

No. 1.—LADIES' BOOTS.

Prices paid for uppers per dozen pairs.

Sewing together of leather	\$0.03
Sewing together of linings	.05
Outside vamping	.25
Outside heel-fixing	.18
Pressing seams	.02
Closing lining and outside together.....	.10
Turning lining and outside together.....	.09
Finishing, stitching round, etc.....	.08
Sewing fancies	.06
Staying seams.....	.08
Scollops and button-holes	.35
Sewing on buttons	.04

Per dozen pairs..... \$1.33

Or per pair, $11\frac{1}{2}$ cents.

Prices paid for bottoming per case (60 pairs).

Stock fitting.....	\$1.00
Lasting and laying sole, by hand	3.45
Sewing sole.....	.50
Beating out, cementing	.50
Trimming edges	.70
Setting edges.....	.70
Nailing and shaving, by machine	.60
Scouring heels, sand-papering.....	.40
Buffing bottoms.....	.50
Relasting.....	.30
Burnishing heels.....	.80
Channelling	1.70
Lining soles (pasting in lining).....	.20

Per case..... \$11.35

Per pair, $18\frac{1}{2}$ cents.

The cutting of the different parts varies between 3 and 5 cents per pair. Taking 5 cents for this quality brings the combined labor cost to 35 cents per pair of finished ladies' boots.

The lower quality (country made) comes, per case, in the bottoming to \$7.25, or $12\frac{1}{2}$ cents per pair; cutting, 3 cents, and, with the cost of uppers even as above, brings the boots to $26\frac{1}{6}$ cents. I have not the details of the work of uppers of this quality, but it may be assumed that the work is being done in proportion to the rates paid for bottoming, and the whole work certainly not to exceed 25 cents per pair. On this topic I am told —

That in times past country work has been much decried, but so many good workmen have found their way into the country that nowadays they are producing a good deal better work.

Work is always given out by the contractors in American shoe factories, and in Lynn the price paid for stitching the uppers complete, with button-holes, including cotton and silk used in stitching buttons, shop rent, insurance, salaries, and all incidentals, delivered at the factory ready for putting on the last, is 20 cents. This is an all-kid, with scalloped vamp and foxing, so called. A plain vamp, Lynn made, would cost from the contractor 15 to 18 cents per pair. In other words, 6 to 8 cents more than the labor items paid in factories to the different branches engaged in the making of the uppers pay the contractor a profit besides all expense and incidental charges, as stated above.

The wages run on an average of \$7 per week for girls and about \$12 for men; I have heard of girls earning as high as \$15 and men \$18 and \$24, and even above. The general average is probably not above \$10, men and women, all round for a full week's work. Dull weeks, with small orders, and weeks without work between the seasons, set in and have to be considered also. It is said all over the shoe trade that eight months of full work amply provides all America, at the present rate of output of the shoe factories, with all the foot-gear required for the year.

This, however, does not alter or change the price and cost of product, and is only referred to incidentally. The relation of cost of production to earnings is an important point, however, and it will be seen at a glance from this that where work is paid by the piece, as it is now in almost every line of manufacture, that goods do not cost 1 cent more in labor to produce, whether the earnings in a week average \$12 or \$6, or even less than that, for the same workers on the same piece prices.

From the piece prices paid it can be easily computed how many pairs a girl would have to sew in the work assigned her to earn her \$1 to \$1.50 per day, and a man to earn his \$2 or \$2.50, if at full work.

B. — GERMANY.

Germany is making great efforts in introducing machinery, and following up England and, principally, America, in this as well as in other lines—to my mind as yet with divided success. I will not speak of her fixed system. This is a matter which closely enters into the price making facts, but it does not much enter into the question of the rather slow adaptation, and the rather inferior working capacity of the operatives, except, perhaps, that by increasing the cost of his loaf it still more aggravates the evils under which the workingman has to stagger. A leading cause is the want of encouragement given to the operatives to get up to a higher level of earnings, and the want of machinery becomes an im-

stated that in many instances piece rates were abrogated when the work people earned too much money and weekly wages resorted to again. This would be putting the cart before the horse, and seems hardly credible, except from the dominating belief that a low rate of wages means a correspondingly low cost of production. Without hope, or something better to strive for, man never exerts himself to the highest extent of his abilities, and those whose economic philosophy consists in keeping the working people at the lowest possible rate of earnings and standard of living are not likely to conduce to rapid progress in the struggle for supremacy. We find, however, among German manufacturers men of high culture and liberal views; men who have not failed to profit by the lesson of a sounder economy, and have shaped their course accordingly. The result is a remarkable success.

Though the following incident is foreign to the subject now under treatment, yet it reveals so aptly the practical soundness of the doctrine of high wages conducing to cheap production, that I will mention the facts here. The facts certainly stand in closest relation with the wider scope of this present inquiry, that of the most suitable conditions under which the most profitable employment of machinery takes place. Several members of the German Parliament, with whom I exchanged views on this subject, called my attention to the arms and machine-making factory of Ludwig, Loewe & Co., who worked on the American system, paid double the ruling wages of Berlin, and in price beat all their competitors in Government contracts and in the ordinary run of business, facts which had repeatedly been brought out and made use of in debates of the Reichstag. Mr. Loewe, the founder of the establishment, as a revolutionary refugee, had emigrated to America. There he became acquainted with the American system of working. He studied with especial care the machine works and especially the labor-saving automatic tool machinery. After the amnesty he returned to his native country and established a factory after the American system. The first outfit of machinery was imported from America and supplied by the Pratt & Whitney Company, at Hartford, Conn. This fact was corroborated to me at my last visit to Hartford by Messrs. Pratt & Whitney. Now they make their own machinery. My visit to the factory of Messrs. Ludwig, Loewe & Co. gave me some very interesting information, of which the main essentials have been stated. It is not pertinent to enter into the organization of these works here, but only to state a few facts relating to the economy of production.

The factory employs, according to the state of trade, from 600 to 1,000 men in the fire-arms factory. Among a force of 600 men the earnings of the various groups stand as follows:

About 240 work on contract and earn from 5.50 to 11 marks a day. The latter are foremen and overseers. Turners and planers earn from 180 to 210

month or \$38.40, or over \$9 a week—a general average not very far below the general average of total employed in American works and certainly fully 25 per cent. above the average in English factories. Compared with the general average ruling in Berlin, it is nearly double the customary rate of wages. The superintendent of the works told me:

It pays us well to pay this high rate of wages. It is economically the cheapest. Best paid men produce the cheapest. We get the picked men, the cream of the working population. With the fine and delicate machinery crude hands would spoil more than their wages; besides, the highest utilization of this subtle and expensive machinery can only be realized by good and very attentive mechanics. We have another advantage. If work is plentiful we get all the work out of a machine that can possibly be got out of it. If work is slack, as often happens in this somewhat precarious trade, we let the men go for whom we have no work and employ the remainder to the full. The reputation which employes of the firm have in the labor world secures them employment at current Berlin rates, with other firms only too anxious to get men from Loewe's works. If the firm gets back to full working and wants the men back, of course the much higher wages paid there is sufficient to bring them back at first notice.

Smaller establishments working at much lower rates of wages have to give up the contest, and can not stand against this rising firm, whose works are constantly extending and who were engaged at the time of my visit in making large additions to their works.

It is almost an axiom that where low wages prevail, machinery, where it is not indispensable, will not be made use of, except under great pressure. Where it was used under these conditions I have found that it is employed in a perfunctory manner and never with the results obtained in high wage countries. Nowhere have I found this rule to apply so forcibly as in the boot and shoe trade, to which I will return now after this short transgression.

In Germany shoe manufacturing by machinery has taken root, but by no means has the "iron shoe-maker" supplanted the one of flesh and blood. Machine shoes are largely made for export. The home trade is mostly supplied yet by the custom shoe-maker, as in the olden days. The uppers, to a large extent, are factory made in this case, but the soling and finishing are done by the shoe-maker on his bench. Equally prevalent is the system of making the boots throughout. Nor is this very surprising. The labor cost of factory-made shoes is comparatively high, as will be seen from the statement below. The day wages are low at which a journeyman hand shoe-maker works, and if the profits on ready-made goods going to the manufacturers and shop-keepers are added to the cost of the materials and labor, it will be seen that the shoemaker can easily hold his own against factory-made goods. It is only where hand labor is high that machinery will find profitable employment. In Saxony, where machinery is more extensively

The first place visited was Offenbach-on-the-Main, the seat of an extensive industry in leather and leather goods of all kinds. In boots and shoes the work is much divided, and a good deal of machinery is employed. Little power, however, is employed. Most of the turning of machinery is by hand or foot-power.

The factory visited is entirely on uppers. They employed in all 61 people, men, women, and children. Of these, 18 were men and the rest women and young persons. The weekly pay-roll was 861.23 marks in the week of my visit, an average of 14.12 per head. The 18 men earned 440 marks, or 24.44 marks per head, leaving 421 marks for the remaining 43 operatives, or 9.80 marks per head. We may say that 12 marks would be the average per adult females and, perhaps, 8 marks for young persons.

The cost of labor in a pair of shoes like the samples I submitted, and standing in finish and work somewhat between my No. 1 and No. 2, is as follows:

Labor cost of making uppers of ladies shoes in Offenbach.

	Per dozen.
Sewing together of leather	\$0.10
Sewing together of linings.....	.05
Outside vamping.....	.08
Outside heel fixing	.07 1/2
Pressing seams	.01 1/2
Closing lining and outside together	.28
Turning lining and outside together.....	.04
Finishing, stitching round	.07
Sewing fancies	.08
Staying seams.....	.06
Scallops and button-holes	1.44
Sewing on buttons.....	.30
	2.59

To which must be added the cost of cutting of 1.10 marks or 26 1/2 cents, and we have a total of \$2.85 1/2 per dozen or 23 3/4 cents per pair, against 11 1/2 cents in America, and with the cutting at one-half of 5 cents, as the American cutting includes also all the parts connected with the soling and heeling of 13 7/2 cents.

Of course in comparisons of this nature it is impossible to cover always the same operations under the same names and items. In one country and another work is differently divided among the operatives. We have to take the nearest approach we can get to, and this I have adhered to as closely as possible. Setting quality against quality, the work costs not over one-half in America, while the general average of earnings is more than twice as high than in America. On the other hand, the expense of running the business is more moderate in Germany, but the net profit share higher.

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		Marks.
This firm does an annual business of		300,000
Cost of materials	200,000	
Labor (counted at 50 weeks, an average of 800 marks per week).....	40,000	
Salaries	6,000	
Rent	1,200	
Taxes.....	600	
Traveling expenses.....	5,000	
General expenses	6,000	
		258,800
Net profit (or nearly 14 per cent.).....		41,200

The proprietor of the factory is an intimate friend of mine, and I know that he has accumulated considerable property, a thing not so very easy in America on a manufacturing business of \$75,000. The expense would eat up most of the gross profit. Here in this case, however, all put their shoulders to the wheel, husband, wife, and sons, now grown up, all watch closely the incomings and outgoings with the above highly satisfactory results. I have estimates covering the same items from American shoe factories, which show only a very small net profit, and that due to taking liberal advantage of all the discounts. The foregoing only relates to the making of the uppers. The soling and finishing I examined in another factory, which, however, as a working system I did not find very perfect. They employ the McKay machines for stitching the soles, which, however, is not done by steam-power, but by turning a hand-wheel with one hand and guiding the shoe with the other. Whoever knows anything of the McKay machine can imagine the difficulties connected with thus working a machine, which under the hands of an expert American operative and steam as the motive power turns out from five to six cases a day. Here, however, the man attending the machine is paid by the week, and in spare moments attends to other work besides. The output as can be imagined is not a very high rate.

COST OF MANUFACTURING SHOES IN FRANKFORT-ON-THE-MAIN.

Here I visited a factory which I had been told was a model factory and working on the most improved progressive basis. I found in the proprietor one of the most affable and liberal-minded gentlemen. After I had related my errand he at once spoke to me without reserve on the conditions under which work is conducted in both countries. I found in his factory, which he showed to me from beginning to end, everything run on very systematic principles. The factory is run by steam-power with machinery of the latest and most improved pattern. Some of the sole-stitching machinery is of

	Lynn.	Frankfort.
Uppers.....	\$1.33	\$2.88 to \$3.60
Soling and finishing	2.27	3.36 to 3.36
Cutting.....	.60	.36 to .36
Total.....	4.20	6.60 to 7.32
Or per pair.....	.35	.55 to .61

The German manufacturer knows this disparity very well. He labors under great difficulties as against the American manufacturer. The system of work is a different one and can not be organized on the basis of the American working methods. The orders which they receive (in Germany) are small, full of details and minute variations, which have all closely to be adhered to. One market wants this, another that specialty, and no one can work on stock or anticipate the want of a more than capricious trade. There the work people would not work with the same spirit as the American work people, being neither as steady nor as enduring, and not willing or able to turn out quantities as they do in America, even if the system necessary from the differing trade conditions were not in the way. Cheapness in America is produced only because large quantities are continuously turned out on a few patterns. Other advantages are that in producing large quantities in a few patterns the American buyer gets all the advantages in the leather market. The choice lots are sent to America, and the German manufacturer has to take what is left and pay a good deal more money for his selection, besides, than the large buyer who buys in big lots. This, of course, is so in all markets and lines of goods. The large buyer has a no inconsiderable advantage over the one who buys in small selections. The American buyers' advantage abroad is more than lost again when he brings his leather to custom-house barriers, and this may serve as a crumb of comfort to my amiable informant. The earnings in this factory are: For women, 9 to 15 marks = \$2.16 to \$3.60; for men, 18 to 30 marks (average 21 marks) = \$4.30 to \$7.20. The work is continuous throughout the year.

COST OF MAKING MACHINE-MADE SHOES IN BERLIN.

The shoe industry in machine-made goods is not very extensive. Much of the old hand-labor shoe-making prevails, and consumers preponderatingly get supplied from this source. I noticed a factory which was pointed out to me as one of the leading firms, and was surprised at finding it of very limited dimensions. They employed, however, very good machinery and worked pretty expeditiously, still in no wise comparable to American swift-ness. My samples were the wonder of all, and the whole force seemed to be at a standstill and critically examined the American shoes. They all admitted that it was excellent work. I cannot say that the boots which were shown to me as a match to those I brought with me were in any way as nice

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	Marks.	
For the making of the upper	9.00	\$2.16
For sewing on of buttons	.40	.10
For button-holes.....	5.00	1.20
For cutting of uppers.....	2.00	.48
		\$3.94

Per dozen (32 $\frac{5}{8}$ cents per pair)

The bottoming and finishing, per dozen, stands:

	Marks.	
For cutting soles and heels (stamping out)	.50	\$0.12
For lasting and laying sole	3.80	.92
For sewing sole.....	.50	.12
For pasting heels	.35	.08 $\frac{3}{4}$
For pressing on heels.....	.80	.20
For trimming edges	1.00	.24
For polishing and finishing	5.00	1.20
		2.88

Per dozen	.24 $\frac{3}{4}$
Per pair.....	.32 $\frac{5}{8}$
Uppers.....	

Making the cost in Berlin	.57
Against the cost in Lynn.....	.35
	.22

Difference in favor of America.....

There is a difference in favor of America of fully 63 per cent. if the goods are taken into consideration. The earnings of men were given me as follows from the wage books: Heel-shavers, 20 marks or \$4.80; cutters, from 24 to 27 marks or \$5.76 to \$6.48; lasters and sole-stitchers, 24 to 30 marks or \$5.76 to \$7.20; burnishers, from 20 to 30 marks or \$4.80 to \$7.20. It was admitted, however, that 21 marks per week would be about a fair average all round.

SHOE MANUFACTURING IN VIENNA, AUSTRIA.

The reasons stated governing shoe-making in Germany hold good also concerning Austria. Shoe-making is, therefore, to a very large extent, conducted by the old hand-power. Austria, however, as well as Germany, works largely for export trade, and the wholesale boot and shoe trade works partly by machinery and partly by hand process. Some very large concerns exist in Vienna, who work mostly by machinery. I visited the most prominent one. The principal of the firm occupies a very high position in commercial circles of the Austrian capital. No sooner had I opened the subject than I brought me to him—the comparative cost and working methods in

build them up first before we could expect them to work with the steadiness of yours. You work for one market, and turn all your attention on its demands. Besides, you must consider that our trade is quite a different one from yours. You run a few styles through a season; we have to cater for all markets—Roumania, Servia, the Turkish provinces, South Oceanica, and almost every other foreign market, besides our own, and all want variations. We have to adapt ourselves to all, and make styles to suit everybody. But still, with all that, our people, even if they were worked on your system, could not turn out the work as cheaply as you do, unless they became used to an entirely different mode of living. Beer, bread, cheese, vegetables, and an occasional bit of meat are hardly sufficient nourishment for exacting, hard, and steady factory work.

Vienna work, in almost every line of manufacture, is excellent, and comes nearer to Parisian work in elegance and finish than any other. In leather work it excels all. In ladies' boots and shoes it is superior to any work I have seen in German factories; still my samples were considered with very favorable criticism from so high an authority. Of course defects were pointed out to me, which they would not show in their best goods, but for good medium qualities they had nothing better to offer. Their cheaper goods are made in the provinces, the cutting is done in Vienna. Selecting goods which compared in almost everything with my samples, number of buttons, and button-holes, he called his foreman and told him to give me the exact prices paid for the work in the particulars wanted. Leaving out the details, the cost per pair for ladies' button boots are as follows for the different divisions:

Ladies' button boots.	Made in Vienna.		Made in country.	
	Florins.	Cents.	Florins.	Cents.
Cutting.....	.20	8	.20	8
Uppers.....	.90	36	.45	18
Bottoming and finishing.....	.65	27	.43	17
Per pair.....	1.75	71	1.08	43
Compared with American at.....		35		25

The button-holes are machine made. A skilled machine button-hole maker earns 2.50 florins, or \$1 per day. The earnings are about as follows:

Occupations.	In Vienna.		In the provinces.	
	Florins.	Dollars.	Dollars.	Florins.
Good sole-workers	12 to 14	4.50 to 5.20	8 to 10	3.20 to 4.00
Cutters.....	18 to 24	7.20 to 9.60	.....	.....
Sewing-machine operators (girls).....	11 to 12	4.40 to 4.80	9 to 10	3.60 to 4.00
Finishers, operators, etc.....	15 to 18	6.00 to 7.20	10 to 12	4.00 to 4.80

MANUFACTURING SHOES IN ERFURT (THURINGIA).

I visited Erfurt (Thuringia) after my return to Germany solely because I was told that there the manufacture of shoes was conducted more on the American system than anywhere else. I found large factories turning out large quantities of goods, but mostly of an inferior kind. They had mostly all American machinery, and the factory where the proprietor was kind enough to give me the desired information gave out the work by the case lot of 60 pairs, the same as in America. His best quality of ladies' shoes, as he admitted, would barely compare with my cheaper number. The button-holes are sewed around instead of button-hole stitches, as in America and in the work of other places described above.

The labor cost in this was: For the uppers (without button-holes), 55 florins or 13 cents; for bottoming and finishing per case, 60 pairs, 48.50 florins = \$12.14, or $20\frac{1}{4}$ cents; for cutting per pair, 12 florins or 3 cents; total, $36\frac{1}{4}$ cents—still 50 per cent. above the lower American quality, although there are no button-holes worked, and the shoes do not come up to the general standard of my sample No. 2. I need not repeat the information received from the gentleman. It is an affirmation of all that has been said above on the subject of competition. Though their advantages in Erfurt are greater on account of the different class of goods and the more thorough system of machine work and subdivision of labor, yet they do not reach the American standard.

Wages are lower in Erfurt than in any other part of Germany where I investigated the shoe industry, and 15 marks or \$3.60 for men as weekly earnings may be taken as a fair average.

SHOE MANUFACTURING IN ENGLAND.

I reserved England for the winding up of my inquiry. I expected to find here things approaching the nearest to American conditions and American working methods. But, as in most things terrestrial, a close view brings out points differently from what they appear viewed from among the clouds. To my great surprise I found everything repeated that I had found to be the case on the Continent. I visited for the purpose of my inquiries Leeds, London, Stafford, and Leicester. In Leeds a common class of goods is made, mostly for men's wear. This did not come within the scope of this investigation, however. In London most of the work is done by outside shoemakers. The manufacturing houses cut out the work and give it to contractors (sweaters). These own sewing-machines and make the uppers. They sometimes have sole-sewing machines, but in most cases the work is given

and then to the finisher. brought into

THE SHOE INDUSTRY OF STAFFORD.

Stafford makes principally ladies' boots and shoes and mostly of a finer grade. They work principally with machinery, and the factories which I visited have some of the best and newest. The machinery is driven by steam. The sewing of the uppers, the lasting, and the general work of bottoming is done in the factory, while the finishing is done out of the house. The trade is largely an export trade and work is not very steady. They complain of dull seasons. Some attribute it to the fact that Leicester is better equipped, works on a larger scale, and can turn out the goods cheaper. On comparison I did not find this to be the case. The Stafford goods impressed me very favorably, and as to the economizing of labor I found nowhere in Europe any better system. The first factory I visited employed a lasting-machine of American invention along with their hand lasters. They find, however, that it has no advantage over hand lasting and the latter process is fully as cheap. They likewise make their own lasts, also on an American machine. They all, work people and employers, praise American inventiveness and machinery. Complaint was made in this instance of poor materials employed where strength is required. The handles where the screws are fastened, and which, in tightening and loosening, are subjected to great strain, were of cast-iron and easily broke off. Some were broken off and this gives cause to just complaint. It is hard to build up an export trade, and so easy to spoil it by saving at the wrong end. A large machine-shop is going in Stafford, manufacturing machinery for which about a fourth of the parts are imported from America, while the rest is supplied from English firms.

The shoe factory referred to employs about 600 hands. They employ hand burnishers in the factory. The greater part of the finishing is done outside. The shoe factories all sell direct to the retail trade, and take special orders for any of the shops. The retail shop sends in your measure and the factory makes the shoes or boots, the same as any hand shoe-maker; the custom work, of course, at a somewhat higher rate. The labor price for the best quality is as follows:

1. — *Cost of binding* ladies glove-button boots per dozen pairs.*

	s.	d.	Cents.
Making linings and taping backs	0	1 3/4	3 1/2
Stitching on top band and button-bit	0	2 1/4	4 1/2
Closing outside front and back seams.....	0	4 1/2	9
Stitching outside front and back seams.....	0	6	12
Paste fitting throughout, vamp turned in inclusive	4	0	96
Stitching round top and scollops.....	1	0	24
Working button-holes by machine	1	0	24
Sewing down ends, perling, and sewing on buttons	2	0	48
Stitching on vamps, with paste	0	2 1/2	5
Stabbing on vamps, with half chain-work in front	0	9	18
Pressing seams.....	0	1 1/2	3

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2.—*Cost of labor to bottom a first-class plain machine-sewed ladies' boot.*

	s.	d.	Cents.
Stock fitting.....	0	0 1/4	0 1/2
Sewing.....	0	1	2
Cutting soles, lifts, middles, top pieces, puffs, shank, insoles, etc.....	0	2	4
Making, including lasting, inserting puffs, opening channel, relasting, putting down channel and heeling complete.....	0	9 3/4	19 1/2
Finishing complete, waist plain.....	0	8 1/2	17
Total.....	1	9 1/2	43
Uppers.....	0	10 1/4	20 1/2
Grand total	2	7 3/4	63 1/2

The bottoming is paid in bulk, according to trade list prices, and so is the finishing.

The earnings are, on the average, as follows:

	£.	s.	\$
Cutters	1	5	\$6.00
Sewers, lasters, and shoe-makers in general.....	1	6	6.24
Adult male labor generally.....	1	4	5.76
Sewing operatives (girls).....	0	12	2.88

From another factory I obtained the price of a somewhat inferior quality, corresponding with my sample No. 2. Here I have for the uppers, including everything (cutting, etc.), 9d., or 18 cents; and for bottoming and finishing, 1s. 4d., or 32 cents; a total of 2s. 1d., or 50 cents. But here, also, as elsewhere, they make every conceivable kind of boots and shoes. While the first factory visited worked mainly on ladies' goods, the other turned out ladies' men's, and children's goods of leather and of stuff, hunting boots, boots and shoes for Scotland, for England, for the Boers of the Transvaal, for the Cape, India, South America, etc. Each market requires separate study and very special attention, and, of course, is sufficient explanation why their system of work cannot easily be altered.

LEICESTER.

Leicester is one of the leading centers in the shoe trade. The factory visited is the largest in Leicester. It employs 1,200 people. A large proportion of the work is done outside. Here, also, I found the same conditions prevail as those described above. The firm are, besides, manufacturers on a large scale at Leeds, where the coarser goods are made, mostly for men's wear. Extensive tanneries are also conducted by them. They do a very large shipping trade all over the world, and I saw cases marked to all the corners of the globe. In Great Britain they have not less than eighty

scale, cheaper, and more approaching the American system of work. I found them, however, quite different from anticipations based on that preliminary information. Their trade is as diversified as any I had looked into before. The partner of the firm, who took me around the different workshops, kindly giving me a whole afternoon of his precious time, which, on my taking leave, he said he would have to make up by working late into the evening, told me that they had between 700 and 800 different patterns. All of them I saw hanging in rows along the walls of the large cutting room, each set under its proper number marked in large letters on the wall. All of them come up more or less frequently in the course of the year. The firm send out sample assortments of any new thing they make to their customers all over the world, for whose markets they may be suitable, and after years often get orders for them from foreign markets. Old styles may, therefore, be called up again at any time. Thus their styles and numbers are continuously on the increase. They have no jobbers in the shoe trade. All goes direct to the retailer. From their retail stores special orders for customers come in every day, and then it will be seen that though their trade is of great magnitude, yet the system of work is not different from the systems described above. I learnt from the gentleman that they are much tied down to trade regulations by the trades-union. The prices of the work are regulated by the quality of the leather. A common shoe is taken as a basis from where the price is built up in successive stages to the highest quality. Every addition of work, of course, receives additional compensation.

They at one time tried and introduced all possible machinery, lasting machinery, burnishing, heel-shaving, etc., but gave it all up again. I was shown a whole cellar full of machinery, mostly American, costing several thousand pounds, which, as my informant said, they would probably have to sell for old iron. The working people do not take kindly to machinery, and, besides, would object to any lowering of wages on that account. Hand-labor is cheap, and they find it more profitable and satisfactory to return and adhere to it. The less machinery they employ, except for stitching, the better they find it. Some burnishing and finishing is done in the factory, but the vastly greatest part of it is done outside by the shoe-makers in their houses. A much more highly finished class of goods is wanted in the English markets than American, and they do not find that anything but a hand-polish will produce it. Even the lasting is mostly done outside, and the lasted shoe is returned to be sewed in the factory, from where it goes out again to the finisher. The firm had so much trouble in the factory when they did their lasting inside (stoppages, shop conferences, demands for higher wages), that the firm resolved to stop the factory-lasting and distribute it around, where they get it done without friction.

The prices paid for ladies' boots (No. 1) are as follows:

<i>Uppers, per dozen.</i>			
	<i>s.</i>	<i>d.</i>	
Cutting	1	9	\$0.42
Fitting all upper part.....	4	7	1.10
Machine-sewing part	4	4½	1.05
Fancy stitching.....	1	4	.32
Button-holes (machine-sewed)	1	10	.44
Buttons, sewing on (machine-sewed)	0	11	.22
Per dozen	14	9½	3.55
Per pair.....	1	2¾	.29½

<i>Bottoming and finishing, per dozen.</i>			
	<i>s.</i>	<i>d.</i>	
Cutting bottoms	0	6	\$0.12
Lasting, etc.....	7	6	1.80
Sewing on soles	0	3½	.07
Putting on heels	0	10½	.21
Burnishing, finishing complete	8	1	1.94
Per dozen	17	3	4.14
Per pair.....	1	5¼	.34½
Adding uppers	1	2¾	.29½
Per pair for uppers and bottoming and finishing	2	8	.64

The earnings of shoe-makers in Leicester, principally those employed in the factory, are as follows, all work being by the piece:

	<i>£</i>	<i>s.</i>	
Clickers (cutters)	1	8	\$6.72
Shoe-makers (lasters).....	1	10	7.20
Very quick hands.....	1	15	8.40
Sole-machine men	1	15	8.40
Sewing-machine hands.....		16	3.84
Fitters (placing together parts ready for machine sewing)		15	3.60
Button-hole operator, 18 to 22s, or \$4.36 to \$5.28.			

The higher earnings in Leicester than in Stafford, the piece prices being nearly the same, are due to a fuller supply of work. I refer back to my remarks on the subject to the pages above treating of the Stafford industry. The working conditions of Leicester are more favorable than in other shoe centers, such as Stafford, Northampton, etc. The hours of work in the factory are fifty-two and a half hours per week, from 8 a. m. until 1 p. m., and from 2 to 6.30 p. m. for the first five week days, and Saturdays from 8

Labor cost of manufacturing ladies' button boots in Lynn, Mass.; Frankfort, Offenbach, and Berlin, Germany; Vienna, Austria; Stafford and Leicester, England; and weekly earnings of operatives in the respective places, of quality—sample No. 1.

Place.	Cost of labor.				Weekly earnings.		
	In up- pers.	In bot- toming.	In fin- ishing.	Total labor cost.	Men.	Women.	Average.
	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>			
Lynn, Mass.....	13 $\frac{7}{12}$	21 $\frac{5}{12}$	.....	35	\$12.00	\$7.00	\$10.00
Offenbach, Germany.....	23 $\frac{3}{4}$	.....	.....	.....	5.87	2.88	3.39
Frankfort, Germany.....	30	31	.....	61	4.32 to 7.20	2.16 to 3.60	3.80
Berlin, Germany.....	32 $\frac{5}{8}$	24 $\frac{3}{4}$	.....	57	4.80 to 7.20	.....	*5.01
Vienna, Austria.....	40	31	.....	71	4.30 to 9.60	4.40 to 4.80	.....
Stafford, England.....	22 $\frac{1}{2}$	24	17	63 $\frac{1}{2}$	5.76 to 6.24	2.88	.....
Leicester, England.....	29 $\frac{1}{2}$	18 $\frac{1}{3}$	16 $\frac{1}{6}$	64	6.72 to 8.40	3.60 to 4.32	.....

* Men's wages only.

In the German and Austrian shoes in this statement, except in Offenbach, where the uppers are made in the factory, the uppers are largely made outside, and the soling and finishing is done inside; for the English, on the contrary, the opposite system stands.

In percentage, taking the American standard as 100, we get the following proportions:

Percentage of labor cost and percentage of weekly earnings, male and female, in manufacturing ladies boots in the respective countries named.

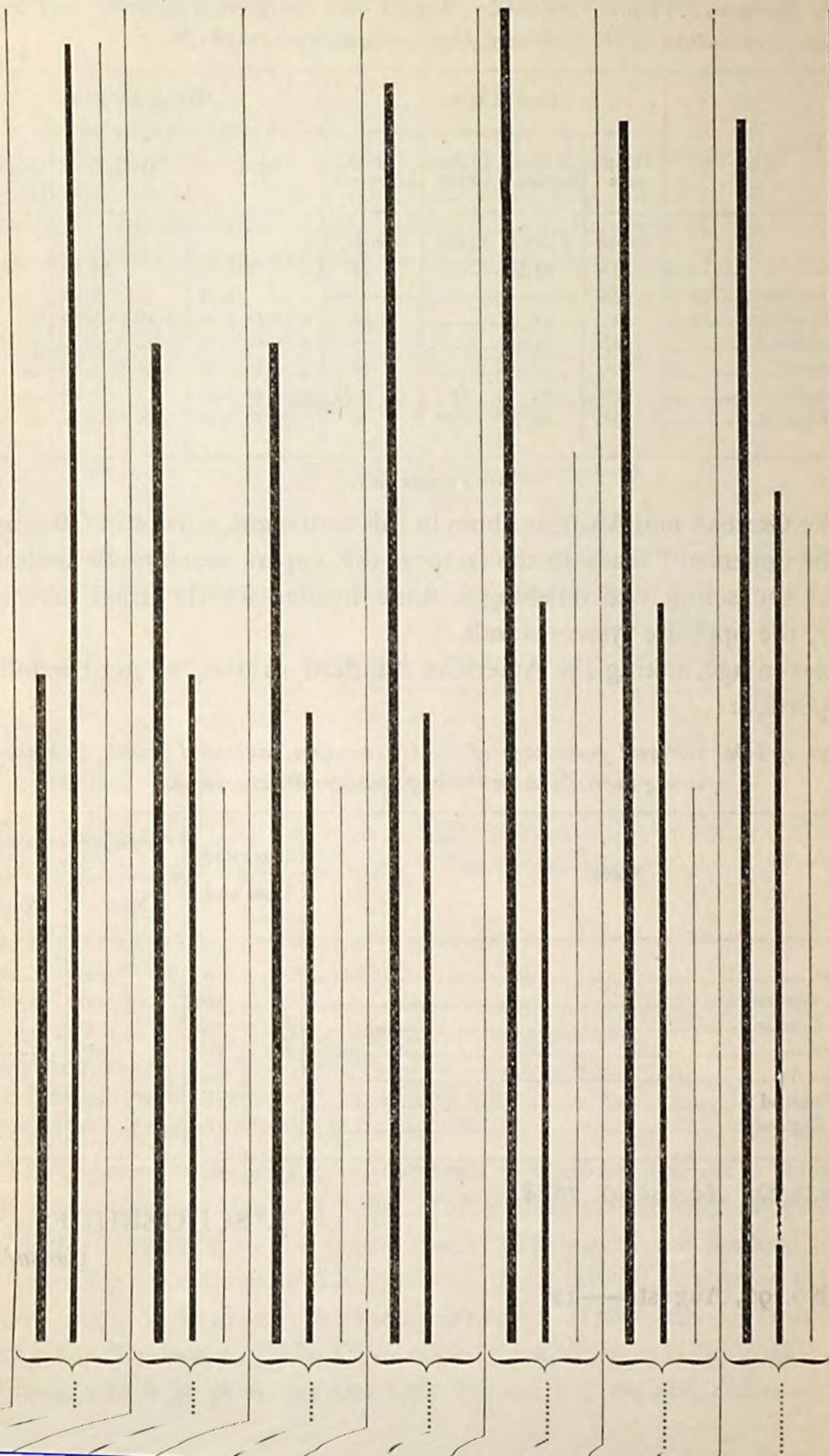
Place.	Percentage of labor cost.	Percentage of earnings.	
		Men.	Women.
Lynn, Mass.....	100	100	100
Offenbach, Germany.....	176	49	41
Frankfort, Germany	174	49	42
Berlin, Germany.....	188	46	.....
Vienna, Austria.....	203	55	66
Stafford, England	182	50	41
Leicester, England.....	183	62	59

TUNSTALL, August 29, 1888.

J. SCHOENHOF,
Consul.

No. 96, August—12.

The following diagram shows the relations of cost of labor to earnings of operatives.



Labor cost of production
Weekly earnings of men
Weekly earnings of women

FREEDOM OF THE RIVER SCHELDT.

This year brings around the twenty-fifth anniversary of the freedom of the River Scheldt, and this most important event for Antwerp was celebrated here on the 14th instant.

In the year 1863 the regular river tax levied by the Dutch Government upon all vessels coming up the stream was abolished. The international enfranchisement treaty was concluded on May 15, 1863, signed July 15 following, and went into effect on August 1 of the same year, from which date all vessels could enter the River Scheldt freed from the former burdensome tax.

Special treaties had to be arranged in advance with all countries, stipulating the manner and time of payments necessary to be made on account of the object in view, and later a general treaty was concluded decreeing the abolishment of the tax and fixing the participation each country interested was to have in this redemption. Paragraph No. 1 comprises the following dispositions:

First, Renunciation on the part of His Majesty the King of Holland, in consideration of the sum of 17,141,640 florins, to the taxes levied upon the navigation of the River Scheldt and its confluent, in virtue of the treaty of April 19, 1839.

Second, The obligation on the part of His Majesty the King of Belgium to pay this amount.

Third, Abolishment of the tax from the date of the exchange of the ratifications of the treaty of May 12, 1863.

The amounts agreed to be paid by the different countries and free cities were as follows:

	Francs.		Francs.
Argentine Republic.....	19,680	Lubeck	25,681
Austria	549,360	Mecklenburg	1,036,320
Brazil.....	1,680	Norway	1,560,720
Bremen.....	190,320	Oldenburg	121,200
Chili	13,920	Peru.....	4,320
Denmark	1,096,800	Portugal.....	23,280
Ecuador	1,440	Prussia.....	1,670,640
France.....	1,542,720	Roman States.....	5,760
Great Britain.....	8,782,320	Russia.....	428,400
Greece	23,280	Spain	431,520
Hamburg.....	23,680	Sweden.....	543,600
Hanover	948,720	Turkey.....	4,800
Italy	487,200	United States of America	2,779,200

Together about 22,500,000 francs. The sum needed to make up the amount required, nearly 15,500,000 francs, was paid by the Belgian Government.

It is true that this Government, in order to protect its commerce, exonerated all vessels from the tax laid upon them by the treaty of April 19, 1839, by paying the same itself to the Government of Holland but the

From the date of the freedom of the Scheldt the commerce of this port has developed in an extraordinary manner. The following figures will show to what extent: In 1862 the importations by sea were 568,871 tons, and by land 95,281 tons, making a total of 664,152 tons, against 2,438,178 tons by sea and 409,372 tons by land; making a total of 2,847,550 tons in the year 1886, being an increase of about 335 per cent. in the space of twenty-four years.

In the exportations for the same period the gain was even greater. In 1862 177,702 tons of merchandise left the country by sea and 44,063 tons by land, a total of 221,765 tons, against 821,753 tons by sea and 452,002 tons by land; a total of 1,273,755 tons in 1886, showing an increase of over 500 per cent.

The increase in the general transit was about the same proportion. In 1862 this movement was 17,128 tons by sea and 68,373 tons by land, aggregating 86,494 tons, against, respectively, 201,268 and 127,592 tons, aggregating 328,860 tons in 1886, nearly four times as much as twenty-four years before.

The total commercial movement combined amounted in 1862 to 971,411 tons against 4,470,165 tons in the year 1886, showing the enormous increase of 3,498,754 tons, or 460 per cent.

The maritime movement of the port of Antwerp shows the tonnage of vessels arriving in 1862 to have been 579,899 tons, and 3,658,900 tons in 1886, an increase of 3,079,001 tons, or more than 600 per cent. The first year after the abolishment of the river tax the benefit to this port is shown from the fact that the arrivals had increased over 120,000 tons, or 20 per cent.; in 1867 the tonnage of the arrivals had increased to 1,128,739, thus doubling itself in four years, and in 1887 the arrivals amounted to 3,801,932 tons, placing Antwerp at the head of the maritime ports of the continent of Europe.—ANTWERP, *August 24, 1888.*

JOHN H. STEUART,
Consul.

MANUFACTURE OF BRUSHES IN THE BLACK FOREST.

The inhabitants of the raw, unfruitful uplands of that part of Baden known as the Black Forest have never been able to wring a life support from their niggard soil. From the very earliest times the inhabitants of this wild, romantic, and healthy region have felt the necessity of other means than agriculture for sustaining life. The Black Forest has therefore always been a very bee-hive of industry. To clock-making and straw-weaving and plait-
the manufacture of brushes. One hundred and fifty years
mines to other and

result was a rude brush, made of rough wood, with rough holes and rough pigs' bristles fastened together with nails. It was a beginning. Rough as it was he soon found customers in the neighboring mills for all he could make. Thoma was then twenty-one. He turned his time and attention exclusively to brush making, and, of course, succeeded in devising new and better methods of construction. From making brushes for flour-mills he turned to making shoe, clothes, and horse brushes. He was commissioned to make brushes for the Austrian garrison stationed at Freiburg. With the money thus obtained he went further and further, until at last he saw a large domestic and export trade established.

Brushes from his shop in the little Black Forest village of Todtnau found their way into Switzerland, Belgium, and France. Week after week saw new efforts put forth and new improvements. Nails and strings as fasteners gave way to wire and glue. About 1840, through Franz Joseph Faller, the brush industry got a new impulse. Up to this time only common brushes had been manufactured; now the finest classes were finished. People once poor began to grow comparatively wealthy. The work was parcelled out among the people, Faller being satisfied with fair profits. The grand ducal government, as it generally does, assisted the young industry by granting premiums for the best results. The directors and teachers of the industrial schools spared no effort to make success complete and gratifying. This generous rivalry and co-operation could only have one result.

Soon a scarcity of bristles compelled manufacturers to seek a substitute in the plant kingdom. This was found in the fiber of a hemp-like plant found in Mexico. This discovery led to the production of a good, cheap article. The increase in the manufacture of this class has grown to enormous dimensions. Some time afterwards horse and goat hair were used; also rice fibers, the latter especially for horse and scrubbing brushes. The bristles now used come mostly from Russia, China, and North America. The difference in bristles is so great that some are very cheap, while others cost \$300 per 100 pounds.

At last machines were introduced; the hand-workers must turn to other employments. Machines could now saw, turn, plane, and bore the woods much better and quicker than human hands, besides doing it much cheaper. Machines have even been invented for putting in the bristles, but with no great success; in the case of bent or oblique surfaced brushes they cannot be used at all. Until something better is found women and children will continue to put in the bristles.

The production is thus divided: (1) sawing, boring, cutting, and turning the woods; (2) preparing the bristles, putting and fastening them in; (3) veneering, painting, and polishing the brushes. This division of labor aids in developing skill in special branches. In Todtnau there are twenty large brush factories in operation.

WAGES PAID.

Men get from 2 to 3 marks, or from 47 to 71½ cents, a day; women get 1 to 2 marks, or from 24 to 47 cents, a day; children, 12 to 20 cents. It depends, however, very much on the person's skill, since most of the help are paid for piece-work, a very skillful man earning from \$1 to \$1.25. The wood used is a beech found in the Black Forest, and sells for 60 to 70 marks per cord. Oak, maple, linden, and cherry are also used. For veneers, mahogany, palisandes, citron, and rose woods are much used. These are paid for by the pound, and are usually very expensive. The principal supply is sold in Germany and Switzerland, but of late years thousands are finding their way into Holland, England, and American countries.

The brush industry of the Black Forest, thanks to intelligent direction, and encouragement on the part of the grand ducal government by premiums, and on the part of the directors and teachers at the industrial schools, is in a position to meet the world in competition, both as to quality, cheapness, beauty, and rapidity of production. This has been proven at exhibitions at Vienna, Sydney, and other places during the last twenty years. The industry has grown up from the simplest and crudest beginnings, and hundreds of families have been nourished by it even in times when other and more pretentious branches have suffered. — MANNHEIM, *August 15, 1888.*

J. C. MONAGHAN,
Consul.

REPORT OF THE BOMBAY FACTORY COMMISSION.

HOURS OF WORK.

Male adults have always been considered to be outside the principle of protection afforded by factory law. They are supposed to be able to take care of themselves, and experience has clearly shown in England that they have done so, and managed to diminish their hours of work more effectually than any act of Parliament could have done, and the result is that in those industries in which men form the majority of hands employed instances of overwork are unknown. Men may be worked overtime, night time, and even on Sundays, so far as the English factory law is concerned, but, in practice, shortening the hours of the protected classes (children, young persons, and women) has just as effectually compelled the shortening of the hours of work of the men as if the latter had been directly dealt with. No doubt this is partly due to the fact that one work in connection with a trade can rarely be ~~independently~~ of some other in which the assistance of children, ~~is~~ recognized that the

The protected classes in England, or those whose labor has been regulated by the factory acts, are :

- I.—Children between ten and fourteen years.
- II.—Young persons between fourteen and eighteen years.
- III.—Women eighteen years and upward.

To enforce the law against overwork it was found absolutely necessary not merely to fix a maximum period of labor in the day, but also maximum limits within which such period might be taken. The absence of such a provision rendered the factory act of 1848 in England unworkable; consequently the present English factory act prescribes that the labor of the above protected classes in textile factories must be taken within 6 a. m. and 6 p. m. or within 7 a. m. and 7 p. m. Within these hours children or half-timers must be worked either in morning and afternoon sets or on alternate days, attending school once a day under the former system and twice a day under the latter, when not employed. Young persons and women must be allowed two hours for meals, and can not be worked continuously for a spell exceeding four hours and a half without at least half an hour for a meal. On Saturday they are prohibited from working more than six hours, and on Sunday their employment is forbidden. No express provision exists in the law prescribing in so many words the number of hours that may be worked in a day or in a week. The limitation is the result of the provision laying down that the labor of protected persons may be taken within certain hours, and within these hours a certain time must be allowed for rest and refreshment. According to the English law, therefore, women and young persons can not be worked more than fifty-six hours in the week.

In the Indian factory act we are astonished to find that the maximum limits within which regulated labor is to be taken are not prescribed; and we further note that there is no mention of women and young persons whatever. Children only between seven and twelve years of age are protected, and that most inefficiently. The result of these omissions is that women can be worked as long as men, or from sunrise to sunset—that is, eleven and a half hours a day, or eighty and a half hours a week, in cold weather, and fourteen hours a day, or ninety-eight hours a week, in the hot weather, and if artificial light is used they may be worked day and night for days consecutively; and that such excessive labor is exacted in the small ginning and press factories of Khándesh is distinctly proved by the evidence before us.

We must add, however, to the credit of the cotton mills in Bombay that, although we found in some cases low-caste women working on machinery as long as men, the almost invariable rule is to treat women with leniency and consideration and to give them light hand work, such as reeling and winding, which admits of their coming later and leaving earlier than the men.

It is a curious fact that, while in Lancashire of 423,000 employed in the cotton factories 253,000 are females, 138,000 are males, and the rest children,

inspector, believes that in time employers will avail themselves more of women's labor in India, but on this point we had not sufficient evidence before us to arrive at a definite conclusion. We are strongly of opinion that some restrictions are necessary on the labor of women, more especially when employed on machinery driven by steam. Here continuous attention and assiduity is called for, and the work must be done like clock-work. The monotonous and unremitting character of the labor, with the necessity for close application to rapidly-moving machinery, has been found to tell on the constitutions of women in England, whereas in hand labor, where no steam power is employed, the pressure is not nearly so great. We can not overlook the facts either that in England the death rate is higher amongst women employed in textile factories on machinery than amongst female operatives otherwise employed, and the higher mortality amongst the children in factory towns is ascribed to the conditions under which their mothers labor. As recommended by Mr. Meade King, women and children should not be allowed to work before 6 a. m. or after 6 p. m., and in that period they should have an hour's interval for food and rest—either a full hour in the middle of the day, or two half-hours with a convenient spell of work between them.

It is worth noting why no mention is made of young persons in the present act. The first bill introduced into council contained the following interpretation clauses:

“Child” means a child under the age of twelve.

“Young person” means a person between the ages of twelve and sixteen years.

And section 6 ran—

No child shall be employed more than six and no young person more than eight hours in any factory in any one day.

The Honorable Mr. Colvin, in his speech in the council assembled for making laws and regulations, on Friday, March 11, 1881, explained why a change was made before the bill became law. He now came to section 7 of the bill. It would be seen that the committee had abolished the distinction which had existed in the bill as originally introduced between “children” and “young persons,” and that the time for the employment of young children had been extended from six to nine hours. He would briefly explain the reasons for these changes. The bill in its original shape had allowed young persons to be employed for eight hours and children for only six, the last mentioned provision being in accordance with the English law. On closer examination, however, there appeared to be good reasons for extending the time of employment of children in this country. In the first place, it

education that they would attend any school, because a great many of them would have no school within reach which they could attend, and because if they had it was extremely improbable that their parents would send them to it. If they were not allowed to remain in the factory, they would either be turned out to absolute idleness or to seek for manual labor elsewhere. A further consideration, and one entitled to much weight, was that if the labor of children were limited to six hours great facilities would be given for evading the law. Mills in this country never worked for less than twelve or fourteen hours, and it would be impossible to prevent a child who had worked six hours in one factory from going to work six hours in another. He said that it was impossible to prevent this, because any elaborate system of registration and inspection by which a check might be put upon it would lead to worse evils than the evasion of the law itself. These were the grounds on which the hours for the labor of children had been extended; and the majority of the committee thought that nine hours was not too great an extension, provided that one hour's interval was allowed during that time for food and rest. This extension having been determined on, there was no longer any object in maintaining a distinction between young persons and children.

It seems the threefold consideration that children or half-timers in England worked six hours and attended school three hours daily; that their work in Indian was of a lighter description than in English factories; and, lastly, that there was a probability of their working six hours in one factory and six in another on the same day, unless attendance at a school was exacted or the term of labor was extended, led to its being finally decided that children were to be worked nine hours. The question thus settled, the retention of a distinction between young persons and children became unnecessary.

It must be admitted that under the arrangement children fared but badly. The time of their employment was increased by an hour beyond the maximum contemplated by the bill for young persons between twelve and sixteen years of age, while no counterbalancing advantage was granted in the way of raising the age for first admission to employment, or for postponing that for full employment as an adult.

None of the witnesses before us were in favor of making a third protected class of young persons, while a large majority were in favor of increasing the age for first employment from seven to eight, or even nine, and some advocated the prohibition of employment as an adult before thirteen. Mr. Meade King strongly recommended that no child should be employed under eight, and that thirteen was quite young enough for a child to commence full-time work in an Indian factory.

We observe that the Bombay Mill Owners' Association, in their memorial to the under secretary to Government, dated September 6, 1880, on the subject of the factory bill, stated that :

ducing any such important change in the relations of the working classes, even if it were without doubt necessary to make the limit of age twelve years. Your memorialists suggest that the interest of the factories, and of the children themselves, would be best conserved by beginning at a comparatively low age and afterwards increasing it. By this means the change would be gradual, and the necessary inconvenience to all classes from an abrupt and vital change would be avoided. The association believes that nothing would justify so high a limit as fourteen years, but should the age of twelve years be fixed on as the ultimate proper limit, the association suggests that it be placed at ten, leaving it to the future to increase it as necessity is shown. The change, if then made, would be a more gradual one, and less injurious to the interests of this new industry. They further suggest that a clause, as recommended by the chamber, be introduced into the bill providing that the certifying surgeon should periodically visit each mill and certify, free of charge, in the register to be kept by the mill, that all the children are physically fit for the work.

It thus appears that the necessity for increasing the age was foreseen and and calculated upon from the first.

We find that one of the principal objects of the English factory acts has been to gradually increase the age for first employment of children. Thus, before 1874 the prescribed age was eight, till the act of that year raised the age to ten for textile factories. Before the important commission, which sat in 1875, and of which his Excellency Sir James Fergusson was president, the evidence and arguments in favor of assimilating the age, and increasing it to ten in all factories and workshops was stated to have been "overwhelming," and the result was that in the factory act of 1878 the statutory limit fixed for all trades was ten, at which it now stands.

Seeing the higher temperature in the mills of this country, the weaker physical development of natives of India, the small practical value of the labor of a child, and the recommendation made by the medical committee appointed by Government resolution No. 3183, dated September 3, 1884, that the ages should be increased to ten, we consider that no child should be employed before nine, and that adult labor should not be exacted until fourteen instead of at twelve as now. We recommend nine in preference to ten suggested by the medical committee, as we think that changes in this direction should be gradual, so as to avoid the possible hardships entailed by throwing a number of children out of employment.

Between five and fifteen is the school age; and, if in this decade nothing is learnt in reading, writing, and arithmetic, the chances are strongly against anything being learnt subsequently. We would be glad to see, therefore, an earlier admission to first employment, say at eight, and an earlier transition to adult employment, say at thirteen, permitted on condition that a child produced a certificate from an educational officer that it had passed a suitable and easy standard or put in a certain number of attendances at school. A ~~has been attended~~ with success in England, and we would ~~as well as in~~

If the age of children be raised in the manner suggested by us, we do not see our way to recommending the creation of the third class of protected laborers, *i. e.*, young persons under sixteen years of age, suggested by Mr. Meade King. Sufficient difficulties are now experienced in determining the age of children without adding further complications. Birth registers and certificates are not to be had as guides in India, and the dental development can not be relied on with certainty.

Until school accommodation is supplied and general arrangements can be made for educating working children, and obliging them to attend a school for a portion of the working day, or on alternate days, we concur with Mr. Meade King in thinking that the only way to enforce the statutory limitation of nine hours for child's labor not being exceeded is to fix a period of employment for such. It is quite evident that on visiting a mill, say at 6 o'clock in the evening, it would be impossible for an inspector to say with certainty whether a child, then working, had been employed only the prescribed nine hours in the twelve or thirteen hours that the mill had been running. If the law has hitherto been obeyed, such is ascribable more to willingness on the part of the owners and managers than to the effect of supervision. We may, however, conscientiously say that we fear many children are worked full time. We recommend, therefore, that children's labor should be taken within the hours of 7 a. m. and 5 p. m., with an hour's interval for meals and rest, to be taken when the women have their relaxation.

DAYS OF REST—SUNDAYS.

There is no point on which opinions have been more nearly unanimous than in regard to the necessity for one day's rest a week, or four days in the month. The factory commission which sat in 1875 made a strong recommendation on the subject, and a large majority of the witnesses then examined urged the matter. Section 8 of the present act allows children not less than four days' holidays in the month, but they form such a very small proportion of the hands employed that adults have not been affected by, nor have they derived any indirect benefit from, the law. We now advocate the extension of the law to women (the medical committee would, we observe, still further extend it to men). The four days should be made statutory by Government notification under the act, and they should be Sundays whenever possible, banks, offices, and docks being closed on that day. Most of the witnesses gave it as their opinion that Sunday would be the most convenient day, and we believe that it is the one invariably selected by the mill-owners under section 8 for the children's holiday. We learn, also, that on the Bengal side mills and other factories close on Sundays, and in Bombay the large G. I. P. and B. B. and C. I. railway workshops, employing between 6,000 and 7,000 hands, certainly do so. On the occurrence of important native holidays, like the Diwāli or Holi in the month —

On an average only fifteen holidays are given throughout the year in Indian factories, while in England, besides ten holidays, there are fifty-two Sundays and fifty-two half-Saturdays, making a total of eighty-eight days altogether. The difference is striking. A feeling in favor of the proposed four days' rest was manifested by all the workpeople, and in the memorial signed by 5,500 operatives and presented to the committee, this concession to all hands, male and female, is prayed for.

We recommend that Government should determine on and notify the days after consulting the Mill Owners' Association, to avoid all chances of inconveniencing trade.

* * * * *

We were much struck by the evidence given before us regarding overwork in the Khándesh (Páchora) Ginning and Press Works. These establishments generally employ less than 100 hands, of whom, more especially in the ginning works, the majority are women and some are children. They work, intermittingly or spasmodically, according to fluctuations in the market and on emergent orders for cotton from Bombay. Their usual working hours are 4 or 5 a. m. to 7, 8, or 9 p. m., but when working at high pressure they work sometimes day and night for eight days consecutively until the hands are tired out and lose their health.

Mr. Rastamji Frámji Wádia gives a very painful description of these industries:

In ordinary seasons, that is when work is not very pressing, the engine starts between 4 and 5 a. m. and stops at 7, 8, or 9 p. m., without any stoppage during the day. The hands work continuously all these hours, and are relieved by one another for meals. In busy seasons, that is, in March and April, the gins and presses sometimes work both night and day, and the same set of hands work both night and day, with half an hour's rest in the evening. The same set continue working day and night for about eight days. When the hands have been working day and night for eight days, and it is impossible to go on longer, other sets of hands are procured from Bombay, if they can be found. In this case the work is distributed between the old and new sets of workers, half working all night and half working all day. More women are employed in gins than in presses. Both the men and the women come to the factories at 3 a. m., as they have no idea of the time, and they wish to make sure that they are at the factory by the time it opens, *i. e.*, 4 a. m. I have 40 gins in one of my factories at Páchora, and I have only 40 women attending these 40 gins. I have only eight spare women. I never allow these women off the gins. I am not alone in this respect; it is the general system. There is no change of hands except at meal times. The hands that work from 4 a. m. till 10 p. m. are paid from 3 to 4 annas per day. All the factories pay at this rate; sometimes we pay our hands 6 pie as a bonus. There is no other work in the district in which these poor women can get employment. These women come from Sátára and Khándesh, and are of the Marátha class. We work these long hours from the 15th of November about ten days in each month. Sometimes we work day

wages, but if the Government forced us to pay our laborers more wages without restricting our hours we would be obliged to charge the merchants higher rates. When we see that the hands are absolutely tired out we are obliged to get others from Bombay. The hands who work these long hours do frequently die. Women are employed on this business.

I do not consider that sufficient provision has been made in case of fire for the escape of the laborers. All these factories should be required to provide two gates and two staircases at a good distance from one another. This is not the case at present.

I would recommend the extension of the act to these smaller factories. I do not know all the provisions of the act, so can not speak of them all, but I can say positively that the act should be applied so far as the guarding and fencing of the machinery, sanitation, and the limitation of the hours of work for women are concerned.

He is corroborated in every detail by the witnesses, Mr. Drewet, Mr. Hormasji Kersedji, and Tánu Bápu, from whose evidence we give extracts below, so we fear there is only too good reason for believing that this description is not overcolored.

Some industries, such as wool and cotton cleaning, are carried on in small factories in Bombay in this intermittent manner when there is a supply of material available sufficient to keep the machinery going. Their operations are conducted under the most adverse sanitary conditions, ventilation being wholly absent, while the air is loaded with animal matter in one case and with fluff in the other, contaminating flour ground in the same room. The extension of the law to these manufactures we consider peremptorily required on grounds of health as also for the protection of the operatives from injury caused by unfenced machinery. We observe also that the sanitary commissioner, in paragraph 27 of his report, writes in strong terms of some of the processes highly injurious to health which he saw carried on in cotton presses in Bombay.

Clause (b) of section 2 of the act exempting factories of less than 100 hands should be repealed. There seems scarcely any need to occupy much space in recapitulating the opinions on this point. One witness after another have added their testimony, and have confirmed the original reports of Mr. Meade King (dated July 7, 1882), and of Mr. Jones (No. 135, dated March 7, 1884) on the subject.

After concluding the evidence on the large factories we took that regarding the minor ones, to which the act does not apply, and it will be found recorded in the proceedings of the twentieth, twenty-first, twenty-second, twenty-third, twenty-fourth, and twenty-fifth meetings of our commission. Twelve of the fourteen witnesses who were examined before the commission, among whom are some proprietors, gave it as their opinion that the act should be extended to minor factories. The remaining two dissent, but it is worth noting that these two gentlemen, Messrs. Jamsedji Hormasji and Nauroji Nassarwánji Bhedwar, are intimately connected with corn-grinding and wool-cleaning factories, the one as manager and the other as partner. These establishments have been described in the severest terms and are

Flour-grinding and Wool-cleaning Factory, or Framji Byramji Flour Mill, of which Mr. Jamsedji Hormasji is the manager, was twice visited by the committee, several times by the inspector, Mr. Jones; by the sanitary commissioner (*vide* paragraph 22 of his report), and by Dr. Lyon, and all condemned in strong terms its sanitary condition. Much weight, we consider, can not, therefore, be attached to the opinions of these two dissentients.

We personally visited several of these small establishments, and their unsanitary condition, their unfenced machinery, and their pressure from overwork satisfied us that early steps were necessary for bringing them under supervision.

It was with respect, however, to the ginning and pressing establishments in Khándesh that the evidence struck us most. We have given an extract from it above, but to form an adequate idea of the state of things described, it is necessary to read the statements of Mr. Rastamji Framji Wádía, Mr. Thomas Drewet, Mr. Soorji Hemráj, Mr. Hormasji Kharsedji, Mr. Tánu Bápu.

Mr. Rastamji Framji Wádía deposes to the want of ventilation, cleanliness, and sanitation generally. He knew of one ginning factory of 40 gins, with no windows and only four doors, the walls of which he had to knock down to improve the ventilation. Machinery was generally unfenced. He had three men killed by an opener, and knew of a factory burnt down by one of these machines. The same set of hands (men and women) worked continuously day and night for eight consecutive days. Those who went away for the night returned at 3 in the morning to make sure of being in time when the doors opened at 4 a. m., and for the eighteen hours' work (from 4 a. m. to 10 p. m.) 3 or 4 annas was the wage. When the hands are absolutely tired out new hands are entertained. Those working these excessive hours frequently died.

Mr. Drewet's deposition is nearly as strong: The season (ginning) lasts about eight months, about five of which the hands work from 5 a. m. to 10 p. m., and the remaining three months they work day and night. The hands are mostly women. Gins and presses never stop for meals; as a rule the hands take their meals at the gins, and he has often seen them taking their food and supplying the gins at the same time. He has often seen them thus supplying the gins mechanically three parts asleep, and a child at the breast, sucking one minute and throwing cotton into the machine the next. They go on working day and night until they are completely worn out. He has frequently heard of their going away sick, but has never heard of their death. He has himself worked day and night without sleep, but has never been ill. He has had Gaddum's press working day and night for

of eighteen hours a

He does not think there is a double set of children anywhere, so they must have worked day and night. The women would have worked twenty-three out of twenty-four hours; speaking of twenty-three hours he means that the woman was relieved by her friends or relations. If a woman was absent for two or three hours no notice would be taken of it. The women are looked on as part of the gins, and they belong to the establishment, and two or three hours is the longest time they can be absent out of twenty-three without any notice being taken of it. The women really work more than the men; the men shirk their work and the women do not. In the ginning factories the women earn 3 annas and the men 4 annas per day. If they work all night they are paid annas 6 and 8, respectively, for the twenty-four hours' work. The dust in these factories is caused by the opener, which is usually kept outside. These openers are for tearing the cotton open. They strike fire sometimes and burn down the premises. This, however, is rare. They strike fire frequently, but have only caused two factories to be burnt down to his knowledge. Stones, sometime the size of an egg, get in the opener and are thrown out with great force and strike a man like a bullet. He thinks nearly all the presses have openers. The women are treated more like animals than human beings, by their husbands more particularly.

Soorji Henráj states: In the ordinary months of the season the bell is sounded at 4 o'clock and the men begin to assemble. The work begins at 5 o'clock. In the busy months of the year his factory has worked till 11 p. m. He has seen all night work done in other places on a few occasions. He has known cases where hands have worked three or four days continuously on an end, and women were amongst these hands. Many of the hands in his factory have become ill from overwork.

Hormasji Karsedji states: Sometimes in his press they worked two days and two nights without stopping. When they worked forty-eight hours at a stretch they stopped for half an hour in the evening. The women worked forty-eight hours, the same as the men. They have worked eight days and eight nights without stopping, and he himself has been ill through working these excessive hours. After working eight days without stopping they are compelled to get another set of hands from Bombay and work with two sets. The machinery in his factory was unfenced, the engine being in a separate room. He had an opener and had had accidents; a stone had been thrown out and injured a man. He had seen a man killed in this manner in another press. He had fires caused by the opener, at least one or two in a season.

Tánu Bápu, overseer, tells much the same story: When there is not much work they commence at 6 a. m. and stop at 7, 8, or 9 p. m. When there is much work they work from 4 a. m. till 10, 10.30, or 11 p. m. The men and women sometimes work for ten or twelve days and nights at a stretch without rest.

Mr. Ommanney, an assistant collector, addressing the commission on the 13th November, 1884, concerning these factories, stigmatised them as being

The above evidence requires little or no comment. It is a sad tale of great want on one side and cruel cupidity on the other, calling louder than anything brought before us for legal interference. We feel, however, that, even with respect to legal regulation here, we must be moderate in our recommendations, as the result of legislative interference may be to deprive these wretched women of their employment and to their place being supplied by men, or to lower the small pittance they receive to such a point as would counterbalance the disadvantages attaching to their employment by the Legislature. These ginning and pressing factories are not numerous, but, being scattered over the mofussil, and in remote parts of the country, are perhaps of more importance to the districts in which they are situated than the larger factories round a center of industry like Bombay, the poorer classes in their neighborhood being almost dependent on them for existence. Too much interference with them might drive the laboring classes to parts like Bombay, already overcrowded; while in time of scarcity or famine they might usefully supplement the efforts of the Government to support those in want. There is no doubt that they are entitled to some consideration also owing to the greater healthiness of the conditions of labor in the country; consequently we recommend that women and children be allowed employment for sixteen hours, with two hours' rest, in temporary factories, such as ginning presses up-country, working for shorter periods than six months in the year.

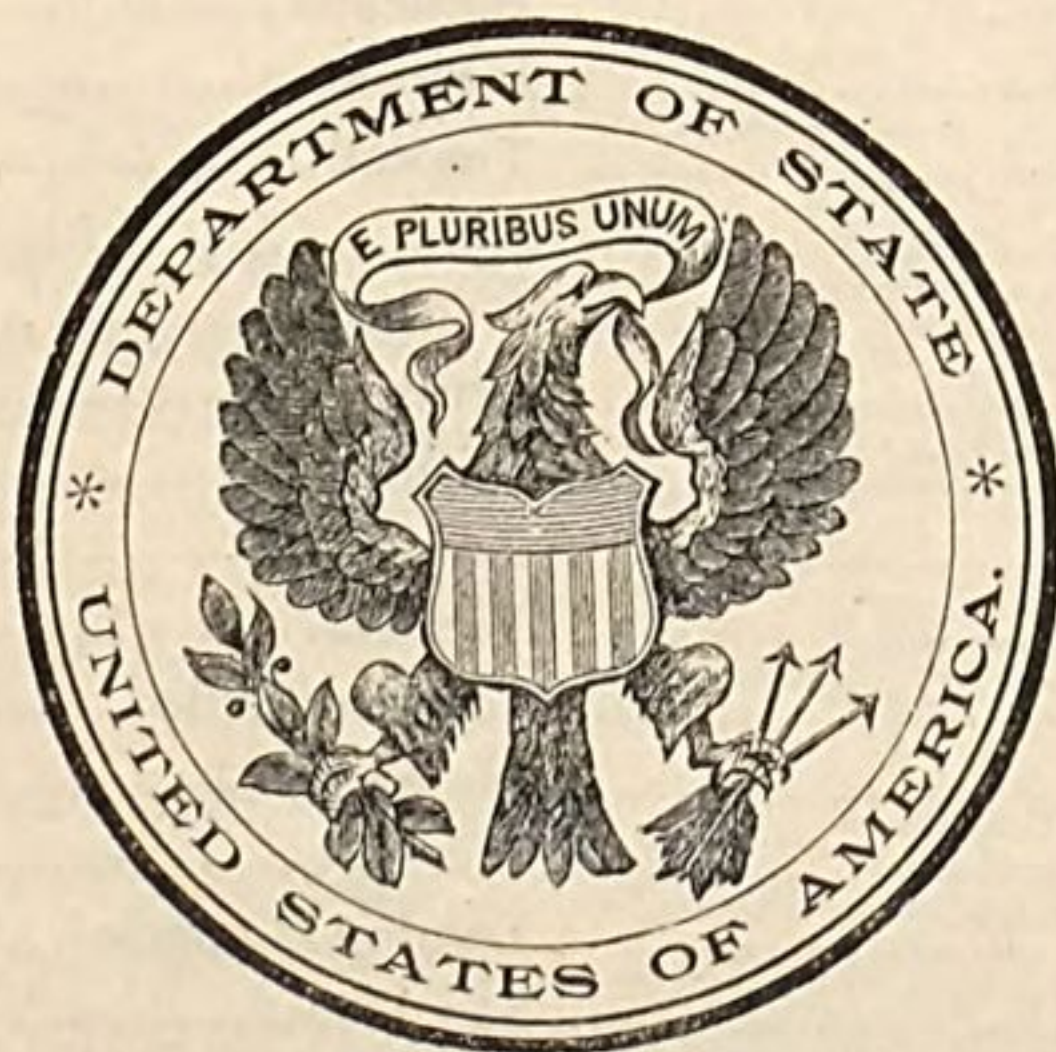
If the clause to which we refer is repealed, the question arises as to where the line is to be drawn and where inspection should cease. In England even domestic employment in dwelling-houses, if any member of the protected classes (child, young person, or woman) is employed in handicraft, is by existing law under regulation and inspection. We, of course, would not go this length in our recommendations, but we are strongly of opinion that all factories, no matter what the number of hands employed, in which steam, water, or other mechanical power is used, should be under regulation, and that other places or workshops where manual labor is exercised should be brought under the law if ten members of the protected classes are employed therein. We may add that we draw the line at ten owing to the impossibility, without more inspectors being appointed, of enforcing the law in workshops employing less hands.

REPORTS

FROM THE

CONSULS OF THE UNITED STATES

No. 97 — SEPTEMBER, 1888.



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VALUES OF FOREIGN COINS.

As adopted by the United States Treasury Department January 1, 1888.

Country.	Monetary unit.	Par of exchange or equivalent in terms of U. S. gold dollar.
Argentine Republic	Peso	\$0.96, 5
Austria.....	Florin	.34, 5
Belgium.....	Franc	.19, 3
Bolivia.....	Boliviano.....	.69, 9
Brazil.....	Milreis of 1,000 reis	.54, 6
British possessions in North America	Dollar.....	1.00
Chili	Peso	.91, 2
Cuba.....	do.....	.92, 6
Denmark.....	Crown.....	.26, 8
Ecuador.....	Sucre.....	.69, 9
Egypt.....	Pound (100 piasters).....	4.94, 3
France	Franc.....	.19, 3
German Empire	Mark.....	.23, 8
Great Britain.....	Pound sterling.....	4.86, 6½
Greece	Drachma.....	.19, 3
Guatemala	Peso	.69, 9
Hayti.....	Gourde.....	.96, 5
Honduras	Peso	.69, 9
India.....	Rupce of 16 annas.....	.33, 2
Italy.....	Lira.....	.19, 3
Japan.....	Yen	{ Gold .... .99, 7 Silver ... .75, 3
Liberia.....	Dollar.....	1.00
Mexico.....	Dollar (silver).....	.75, 9
Netherlands.....	Florin.....	.40, 2
Nicaragua.....	Peso	.69, 9
Norway	Crown.....	.26, 8
Peru	Sol.....	.69, 9
Portugal	Milreis of 1,000 reis.....	1.08
Russia	Ruble of 100 copecks.....	.55, 9
Spain ..	Peseta of 100 centimes	.19, 3
Sweden	Crown.....	.26, 8
Switzerland	Franc	.19, 3
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FOREIGN WEIGHTS AND MEASURES, WITH UNITED STATES EQUIVALENTS.

Denomination.	Where used.	United States equivalent.
Almude.....	Portugal.....	4.422 gallons.
Ardeb.....	Alexandria.....	7.6907 bushels.
Arratel or libra.....	Portugal.....	1.011 pounds avoirdupois.
Arroba.....	Portugal and Brazil.....	32.38 pounds.
Do.....	Spain and Buenos Ayres.....	25.36 pounds.
Do.....	Spain (wine).....	4.26 gallons.
Artal.....	Morocco.....	1.12 pounds avoirdupois.
Baril.....	Argentine Republic and Mexico.....	20.0787 gallons.
Candy.....	Bombay.....	560 pounds avoirdupois.
Do.....	Madras.....	500 pounds avoirdupois.
Cantar.....	Turkey.....	124.7036 pounds avoirdupois.
Catty.....	China.....	1.333 pounds avoirdupois.
Do.....	Japan.....	1.31 pounds.
Do.....	Java, Siam, Malacca.....	1.35 pounds.
Do.....	Sumatra.....	2.12 pounds.
Centner.....	Bremen.....	127.5 pounds.
Do.....	Brunswick.....	117.5 pounds.
Do.....	Darmstadt and Zollverein.....	110.24 pounds.
Do.....	Denmark and Norway.....	110.11 pounds.
Do.....	Nuremberg.....	112.43 pounds.
Do.....	Prussia.....	113.44 pounds.
Do.....	Vienna.....	123.5 pounds.
Fanega.....	Mexico.....	1.54728 bushels.
Do.....	Peru.....	140 Castilian pounds.
Gramme.....	Metric.....	15.432 grains avoirdupois.
Hectoliter.....	do.....	26.417 quarts.
Kilogram, or kilo.....	do.....	2.2046 pounds avoirdupois.
Kilometer.....	do.....	0.621376 miles.
Last.....	Belgium and Holland (dry).....	85.134 bushels.
Do.....	England, for dry malt.....	82.52 bushels.
Do.....	Prussia.....	112.29 bushels.
Libra.....	Castilian.....	7100. grains troy.
Do.....	Chili.....	1.014 pounds avoirdupois.
Liter.....	Metric.....	1.0267 quarts.
Livre.....	Guiana.....	1.0791 pounds avoirdupois.
Maund.....	Bengal.....	82.285 pounds avoirdupois.
Do.....	Bombay.....	28 pounds avoirdupois.
Do.....	Madras.....	25 pounds avoirdupois.
Meter.....	Metric.....	39.37 inches.
Do.....	Metric (cubic).....	1.308 cubic yards.
Do.....	Metric (square).....	1550.0 square inches.
Oka.....	Egypt.....	2.7235 pounds avoirdupois.
Do.....	Hungary.....	3.0817 pounds avoirdupois.
Do.....	Turkey.....	2.83418 pounds avoirdupois.
Picul.....	Borneo and Celebes.....	135.64 pounds.
Do.....	China and Sumatra.....	133 1/3 pounds.
Do.....	Japan.....	130 pounds.
Do.....	Java (Batavia).....	135.10 pounds.
Do.....	Hemp of Manila, Philippine Islands.....	139.45 pounds.
Do.....	Sugar of Manila, Philippine Islands.....	140 pounds.
Pie.....	Argentine Republic.....	0.9478 feet.
Do.....	Castilian.....	0.91407 feet.
Pik.....	Turkey.....	27.9 inches.
Quarter.....	England.....	8.252 bushels.
Quintal.....	Brazil.....	130.06 pounds avoirdupois.
Do.....	Buenos Ayres.....	101.42 pounds avoirdupois.
Do.....	Castille, Chili, Mexico, Peru.....	101.61 pounds avoirdupois.
Do.....	Metric.....	220.47 pounds.
Do.....	Cochin-China.....	590.75 grains troy.
		2.04783 bushels.

CONSULAR REPORTS

ON

COMMERCE, MANUFACTURES, ETC.

No. 97.—SEPTEMBER, 1888.

AUSTRALASIAN WOOL TRADE.

The returns of the export of wool from all the colonies for the season of 1887-'88 have been made up to the 30th of June, 1888, and, as predicted in my report of the 20th of March last, the quantity is in excess of that of the previous season by nearly 100,000 bales. The total quantity of wool exported from Australasia from the 1st of July, 1887, to the 30th of June, 1888, was 1,283,350 bales, against 1,185,282 for the corresponding period of 1886-'87, thus showing an increase of 98,068 bales. New South Wales increased her export by 64,310 bales; Victoria, 15,865 bales; South Australia, 1,907 bales; Queensland, 23,576 bales, and Western Australia, 65 bales. There was, however, a decrease in the quantity exported from New Zealand of 1,964 bales, and from Tasmania 5,061 bales. The decrease in New Zealand was occasioned by the inclement weather during the lambing season, and the excessive rains at shearing time. The rains in many districts affected both the weight and the quality of the fleece.

EXPORT OF WOOL.

The subjoined table shows the total quantity of wool exported from each of the colonies for years ended June 30, 1887-'88:

Colonies.	1888.	1887.	Increase.	Decrease.
	<i>Bales.</i>	<i>Bales.</i>	<i>Bales.</i>	<i>Bales.</i>
Victoria	347,863	331,998	15,865	.....
New South Wales	397,271	332,961	64,310	.....
South Australia.....	150,027	148,120	1,907	.....
Queensland.....	88,881	65,305	23,576	.....
West Australia	16,438	16,373	65	.....
Tasmania	16,657	18,621	.....	1,964
New Zealand.....	266,213	271,904	.....	5,691
Total.....	1,283,350	1,185,282	98,068	.....

I am indebted to Mr. Alexander Bruce for the subjoined table showing the number of each kind of sheep in New South Wales:

Classes.	Rams.	Ewes.	Wethers.	Lambs.	Total.
<i>Merino—Combing.</i>					
Superfine:					
Pure and stud	42,940	461,875	124,571	214,593	843,979
Ordinary	76,031	1,744,904	1,341,129	1,221,672	4,383,736
Medium:					
Pure and stud	68,142	995,278	435,152	660,987	2,159,559
Ordinary	171,128	5,796,684	3,857,549	3,579,810	13,405,171
Strong:					
Pure and stud	49,286	877,332	414,860	601,024	1,942,492
Ordinary	116,878	4,179,713	2,647,385	2,795,268	9,739,244
Total combing					32,474,181
<i>Merino—Clothing.</i>					
Superfine:					
Pure and stud	10,977	208,276	107,626	136,404	463,283
Ordinary	25,019	536,257	522,454	302,941	1,436,671
Medium:					
Pure and stud	24,074	314,945	205,617	203,741	748,377
Ordinary	65,203	2,579,689	1,752,776	1,550,674	5,948,342
Strong:					
Pure and stud	19,349	299,520	175,550	215,425	709,844
Ordinary	49,794	1,811,695	1,191,705	1,175,818	4,229,012
Total clothing					13,535,529
Total number of merino sheep					46,009,710
<i>Long-wooled and cross-bred sheep.</i>					
Lincoln:					
Pure and stud	3,075	31,338	27,301	23,471	85,185
Ordinary	3,342	36,631	37,890	21,564	99,427
Total Lincoln					184,612
Leicester:					
Pure and stud	2,957	29,860	29,747	21,485	84,049
Ordinary	2,545	22,638	19,947	15,990	61,120
Total Leicester					145,169
Downs:					
Pure and stud	626	3,678	1,991	2,949	9,244
Ordinary	1,003	7,747	10,948	5,267	24,965
Total Downs					34,209
Romney Marsh:					
Pure and stud	10	91	173	69	343
Ordinary	613	5,086	10,195	4,292	20,186
Total Romney Marsh					20,529
Total number long-wooled sheep					384,519
<i>Crosses.</i>					
Crosses of the above breeds (long-wooled) with merino principally	1,828	213,494	197,580	158,021	570,923
Grand total					

During 1887, 614,118 sheep were introduced into New South Wales from the other Australasian colonies, principally overland, and 3,594 by sea. The quarantine regulations which were in force in 1887 prevented importation from England and the United States and other countries. It is estimated that out of the total number of sheep in Australia only about 3,000,000 are shepherded, and that the remainder, 93,462,038, are kept in paddocks. In New South Wales the estimated number paddocked is 44,725,073; shepherded, 1,238,868; both ways, 1,001,211; total, 46,965,152. In forty-five districts the sheep are said to be improving, which condition the chief inspector of stock attributes to the good season, increased attention to breeding and paddocking, and the introduction of high-class rams and ewes and the exercise of judgment and care in classing and culling the flocks. The general average of the lambing for New South Wales is returned by the inspector of stock at $76\frac{1}{2}$ per cent. and the shepherded sheep at $68\frac{1}{2}$ per cent., a very slight difference. In thirty-one districts the lambing was very high, in fourteen districts high, and in seven districts fair, and in four districts low. The fine season was the principal cause of the high average, and the wet weather the low average. The total clip in New South Wales, according to the number of sheep, would be 31,082,200 sheep shorn in the grease, average clip, 5 pounds 9 ounces per sheep, equal 172,894,743 pounds; 90,000 sheep, hot water and spout washed, average clip, 3 pounds 12 ounces per sheep, equal 337,500 pounds; 647,945 sheep, creek washed, average clip, 3 pounds $1\frac{1}{2}$ ounces per sheep, equal 1,997,830 pounds; 554,687 sheep, scoured, average clip, 2 pounds 14 ounces, equal 1,594,725 pounds. Lambs—8,185,458 lambs shorn in the grease, average clip, 1 pound $12\frac{1}{2}$ ounces per lamb, equal 14,580,347 pounds; 123,745 lambs, washed, average clip per lamb, 7 pounds 5 ounces, equal 162,415 pounds; total clip, 191,567,560 pounds.

CONDITION OF THE CLIP.

In nearly every part of Australasia the condition of the clip showed an improvement over that of the previous season. The clip in the Riverina district was more than up to its usual high standard. These wools were broad, well-grown, and heavy in grease. The manager of the New Zealand Loan and Mercantile Agency Company (Limited) at Melbourne states that the Riverside wools showed a decrease in the amount of sand and dust. From the Lower Lachlan the wools were well grown and in good condition. The Upper Lachlan were very heavy in the grease, and in many instances were wanting in luster and fineness. The Eastern Riverina wools were of *light in weight*, and long in staple and of brilliant *but seedy*.

The wool-growing country of South Australia is divided into four districts:

(1) The Southeastern district adjoining the western border of Victoria. The wools grown there are usually of very fine quality, light in grease, and of good staple. The clips are generally well got up and are often sold as Victorian-grown wool. Occasionally the fleeces suffer from the prevalence of tick. The land is held principally by large free-holders, who pay very great attention to breeding and classing.

(2) The Hill district. This is the home of the best class of South Australian wools, and contains the estates or runs of the most celebrated breeder of stud sheep in that colony. The wool grown in the Hill district is always in demand for the American market. The fleece is of a bright, bold type, sound and long in staple. The sheep are noted for their large, strong frames. The fleeces yield generally from 10 to 12 pounds of wool, whilst those from the best rams yield over 20 pounds each.

(3) The Western district. The wools of this district have the reputation of being free from burr. They are of fair quality and sound in staple, but very heavy in grease, and require great attention to skirting and classing.

(4) The Northern district is the most extensive in that vast colony (South Australia), and extends to the center of the Great Island continent. The wools produced in the Northern district are generally of a red earthy color, dry and wasty, the backs being very tender and fuzzy. The chief fault in this wool in good seasons is the prevalence of burr and seed.

A feature in the Sydney market this year is the introduction of a greater quantity of wool from Queensland than formerly. Queensland now takes the second rank in the number of sheep in Australia and the third rank in Australasia. Growers in Queensland are beginning to see the importance of obtaining quick returns from the sale of their wool in Sydney.

The product this season is remarkable for its fineness and soundness of staple. These fine-haired wools always elicit strong competition from the continental buyers who visit the Sydney markets. At one time it was supposed that wool could not be grown successfully in a country like Queensland, a great portion of which is in the tropics, and it was said even by London scientists that when wool was introduced it would turn to hair. The Australian explorer Landsborough, when confronted with such statements, asked, "How, then, do you account for the woolly heads of the tropical African?"

James Bonwick, F. R. Q. S., an authority on Australasian wool, admits that there is some difficulty in the way of obtaining heavy fleeces in the tropics, but says that there is no obstacle to the production of fine fleeces. The plodding Lincoln or Leicester might suffer from heat or drought, but the more lively merino is at home in such a climate, and delights in the salt bush when the grass fails. The best wool grown in Queensland is in the Darling downs, Peak Barcoo downs, and Diamantina downs, and the coun-

The Queensland merino is usually classed as fine and medium clothing wool and fine, medium, and strong combing wool. The sheep producing the latter thrive best in the downs, the rich and fertile country immediately west of the main coast range.

Western Australia, although the largest colony in the group, and possessing an area of about 1,000,000 square miles, contains very few sheep. The number of sheep, however, is steadily increasing and new pastures are being discovered. The country east of the Darling River is specially suited for sheep farming, and even in the north there are vast tracts of well-grassed lands. The greater portion of the interior of this vast colony is regarded as of little value, being composed of a succession of sandy ridges and hollows, clothed here and there with scrubby bushes and timber, but without any traces of grass or water. The sheep in the grazing districts have of late years improved in quality, and the farmers take more pains than formerly in skirting their wool. Mr. Henry Austin, in his wool circular for July 1, 1888, is very decided in the opinion that Australian farmers should pay more attention to the weight of the fleece than to the quality. He says: "It can not be too often impressed upon wool-growers that weight is the one thing necessary, and that all other considerations should be sacrificed to its attainment." He argues that at present prices no one can live on the old scale of weights, and that if the farmer wishes to make ends meet he must produce heavier fleeces. He thinks that the wool production of the world has for a time reached its maximum.

COLONIAL SALES.

Between 30 and 40 per cent. of the wool product is sold direct in the colonial market. During the year ended June 30, 1888, the total sale was 374,008 bales. The number of bales offered was 475,658, and it is said that if the offerings had been larger the sales would have increased in a corresponding degree, inasmuch as a number of buyers left before completing their purchases. The London wool merchants are doing everything in their power to check the colonial sales. They agree that it pays the buyer better in the long run to get his supplies in London rather than in Australia, for the reason that the changes in the market are apt to influence private dealers to sell under current rates. This method of reasoning finds little favor, and it is said that it is too much to expect the people to turn over the markets created by their own enterprise to foreign buyers. Moreover, vast sums of money have been expended in the erection of magnificent warehouses with commodious auction-rooms in all the central cities of Australasia. In some of these buildings, for instance that of Messrs. Mort & Co., at Sydney, the seats in the auction-rooms are arranged in tiers up to the landing leading to the business offices. Buyers can have their seats registered, and there is no doubt about the seats. This building is

examination of the article in bulk. The total floor space in the whole block is 178,878 square feet. The floor joists rest on iron girders so as to avoid the loss of space incident to the use of wooden girders. The buildings are on Circular Quay, and in close proximity to the berths of the great steamships trading with Sydney. The warehouses are supplied with hydraulic elevators. Whatever may be said in favor of purchasing wool in London, there is a strong tendency in Australia to encourage the local sales. Buyers find it to their advantage to be on the spot, and the growers are enabled to obtain satisfactory and prompt settlements of their accounts. There are, in addition to those mentioned, several other extensive warehouses in Sydney, those of Goldsborough & Co. and the New Zealand Loan and Mercantile Agency Company (Limited), being especially worthy of mention. The business of the latter company is becoming colossal, and takes rank next to that of Goldsborough & Co. The New Zealand Loan and Mercantile Agency Company (Limited) have for many years recognized the importance of bringing the colonial wool markets as near as possible to the point of production. Besides their immense warehouses in Sydney and Melbourne, they have recently purchased five acres of land at Kensington Hill, near Melbourne, at the junction of the northeastern and western lines of railways, for the purpose of erecting buildings, which, it is said, will surpass anything of the kind in the world. The advantage to growers will be very great, for, with the improvements it is proposed to adopt, the company will be enabled to handle their produce with less cost and with greater facility than formerly. The buyers will also be benefited by the methods they propose to adopt for sampling and shipping the wool. The course adopted by the company in enlarging their business is an evidence of their faith in the rapid expansion and growing requirements of the Australasian wool trade.

The New Zealand Loan and Mercantile Agency Company (Limited), with one exception, handles a larger quantity than any other firm in the colonies, R. Goldsborough & Co. having the first rank, Mort & Co. the third, and the Australian Mortgage and Agency Company (Limited), Harrison, Jones & Devlin, Dalgetty & Co., Dennis L. Austin, and others following.

The subjoined table shows the number of bales of wool handled by the New Zealand Loan and Mercantile Agency Company (Limited) for the past three years, the total for the past season exceeding its predecessor by 10,736 bales:

Shipments and sales.	Bales.	Bales.	Bales.
	1885.	1886.	1887.
Shipments to London	82,131	85,923	90,291
	1885-'86.	1886-'87.	1887-'88.
Sales in Melbourne.....	43,617	44,282	45,647
Sales in Sydney.....	7,408	9,873	14,076
Sales in Adelaide.....	3,900	5,244	6,407
Sales in New Zealand	9,710	13,470	13,107

It will be seen from the preceding table that the company increased its operations by 22,762 bales since 1885-'86 and by 10,726 bales since 1886-'87.

In the colonial market wool is sold by one-fourth pence (one-half cent) bids, while in London no bid less than one-half pence (1 cent) is accepted at auction, and strong efforts have been made here to induce the London auctioneers to adopt the colonial plan. Buyers in the London market are, however, opposed to the movement for the reason that it would necessitate an extension of the time of the sales.

SAMPLES OF WOOL.

I am forwarding by the outgoing San Francisco mail steamer *Mariposa* a collection of twenty-four samples of Australasian wools to the Department of State, Washington, D. C. These samples were prepared especially for me by the New Zealand Loan and Mercantile Agency Company (Limited), and are inclosed in a very beautifully polished red cedar case covered with glass doors. Each sample is arranged so as to be seen without opening the doors, and contains a description of the kind of wool, the name of the district where grown, weight of fleece, and the price of same per pound in the Sydney market. The case is divided into four different apartments, representing the colonies of New South Wales, Victoria, South Australia, and New Zealand. The two former colonies are represented by eight samples each and the two latter by four samples each. The whole is surmounted by a tastefully-carved cornice, upon which is inscribed in gilt letters the name of the company making the presentation, etc.

On the next page is a descriptive list of the samples, with the names, brands, descriptions, and prices per pound in Sydney, which has been very kindly prepared for me by Mr. James Wilson, secretary of the Commercial, Pastoral, and Agricultural Association of New South Wales.

Sample 1, Goorianawa Baradine.—Grown in the district of Liverpool Plains, about 238 miles north of Sydney, in open country, consisting of basaltic black soil plains, with belts of timber, sheep paddocked and fed on natural indigenous grasses only. Station situated in latitude $31^{\circ} 5' S.$, longitude $148^{\circ} 56' E.$, having a mean annual rain-fall of 23.29 inches, and on an area of about 136,000 acres carrying an average of 56,000 sheep, breeding and fattening, bred mostly from the Mudgee type of sheep and possessing their characteristics. Several of the qualities of these fleeces were shown in samples Nos. 59 to 64, forwarded with my special report to the Department of State, entitled "The Australasian Wool Season of 1887-'88," in dispatch No. 235 of the 20th of March last. This fleece is a high class combing merino and its Sydney value is 8*d.* (16 cents) to 9*d.* (18 cents) per pound, the average yield per sheep being about 6 pounds. Altitude 850 to 900 feet above sea-level at Sydney.

Grown in the Upper Hunter district in

Descriptive list of samples, with names, brands, description, and prices per pound in Sydney.

District.	Brand.	Description.	Sydney value, 1887-'88.	Melbourne value, 1887-'88.	Adelaide value, 1887-'88.	Christchurch value, 1887-'88.
NEW SOUTH WALES.						
Coonabarabran, Liverpool Plains.....	M. & Co., Goorianawa.....	First combing, greasy merino	Pence. 8 to 9	Pence.	Pence.	Pence.
Wingen, Upper Hunter	F. Murrulla	do	9	.....	.....	.....
Murrumbidgee, Upper Hunter	Glenalvon	do	8½ to 9	.....	.....	.....
Mudgee	N. P. B.	Supercombing, greasy merino	11 to 12	.....	.....	.....
New England.....	T. R. C. Dundoo.....	do	17 to 18	.....	.....	.....
Burrowa	Tarango.....	do	11 to 11½	.....	.....	.....
Upper Hunter.....	Barsham	do	9 to 10	.....	.....	.....
Bligh.....	Galga	Strong combing, greasy merino	7½ to 8½	.....	.....	.....
VICTORIAN.						
Northeastern Victoria.....	Killeen	Second combing, greasy cross-bred.....	.....	7½	.....	.....
Western Victoria	Decameron.....	First combing, greasy merino.....	.....	10¾	.....	.....
Riverina, N. S. W.	Bull Plains	do .....	.....	9½	.....	.....
Northwestern Victoria	H. L. A. } A.	First combing, greasy cross-bred.....	.....	11¼	.....	.....
Western Victoria	R. #	Supercombing, greasy merino .....	.....	12¾	.....	.....
Northeastern Victoria.....	Kanumbra	First combing, greasy merino.....	.....	9	.....	.....
Western Victoria	W. W. B. } Woodside } T. T. } W.	do .....	.....	9½	.....	.....
Northwestern Victoria.....	.....	Fine combing, greasy merino .....	.....	9 to 10	.....	.....
SOUTH AUSTRALIA.						
North of Adelaide, S. A.....	Paratoo	Greasy merino combing .....	.....	.....	6¼	.....
	{ Hill River } Stud Flock }	Strong combing, greasy merino .....	.....	.....	10	.....
	Canowie.....	do .....	.....	.....	3 to 10	.....
	{ Hill River } Stud Flock }	do .....	.....	.....	3 to 10	.....
NEW ZEALAND.						
Canterbury.....	Buccleuch	Fine combing, greasy merino .....	.....	.....	.....	10
Do	G. H. Bangor.....	Fine quarter-bred Leicester.....	.....	.....	.....	10½
Do	Gunn	Fine quarter-bred.....	.....	.....	.....	10½
Do	G. H. Bangor.....	Coarse half-bred Leicester.....	.....	.....	.....	10

indigenous grasses only. Station situate in latitude $31^{\circ} 55'$ S., longitude $150^{\circ} 55'$, having a mean annual rain-fall of 25.56 inches and on an area of about 13,000 acres carrying an average of 9,000 sheep, mostly breeding, bred from select combing sheep with an infusion of collaroy, Llangollen and Tasmanian blood carrying very dense heavy combing fleeces, heavy in the grease and possessing luster and character. This fleece may be described as first combing greasy merino, and its Sydney value (1887-'88) is about 9d. (18 cents) per pound. Altitude 1,000 feet above sea-level.

Sample 3, Glenaloon Murrurundi.—Grown in the Upper Hunter district, 198 miles from Sydney on the southern slopes of the main dividing or Liverpool range at the head of the Page River, a tributary of the Hunter, at a considerable altitude on ring timber country of excellent grazing quality, very healthy for sheep. Sheep fed on indigenous grasses only. Station situated in latitude $31^{\circ} 46'$ S., longitude $150^{\circ} 51'$ E., having a mean annual rain-fall of 30.35 inches, and on an area of 14,000 acres carrying up to 14,000 sheep, chiefly breeding, bred from selected sheep of the Mudgee type, with an infusion of Tasmanian Prince II blood, carrying fine combing fleeces light in grease with grand luster. This fleece may be described as a first combing merino in the grease, Sydney value (1887-'88) is from $8\frac{1}{2}$ d. (17 cents) to 9d. (18 cents) per pound, a very fair type of this particular class of wool. Altitude above sea-level over 1,500 feet.

Sample 4, N. P. B. Mudgee.—This is the celebrated Mudgee brand of wool in New South Wales, grown at Havilah, 145 miles from Sydney, on the slopes of the head-waters of the Cudgegong River, a tributary of the McQuarie River or western waters. Soil light, warm, and sandy, with heavily grassed flats very suitable for fine wool-breeding sheep. Sheep paddocked and fed on natural indigenous grasses only. Havilah, situated in latitude $32^{\circ} 35'$ S., longitude $149^{\circ} 35'$ E., having a mean annual rain-fall of 25.24 inches, and on an area of 43,000 acres, carrying generally 16,450 sheep with some cattle. This flock has long occupied the premier position among fine combing merino sheep of Australia, and for over forty years have been carefully bred and culled, descended from imported merino ewes from Saxony and rams from George III Spanish merino flock. Great care and study have been used to give them a thorough Australian representative character. Their pronounced type has caused them renown throughout Australia, and to an infusion of their blood into Salt Bush country much of the excellence of many flocks is to be attributed. They carry heavy fleeces of especially fine, even, and lustrous wool of superb quality. The brand has almost invariably topped the London market, and averages from 7 to $8\frac{1}{2}$ pounds per sheep. This fleece is a superb combing merino stud flock fleece in the grease and its present Sydney value is 11d. (22 cents) to 12d. (24 cents) per pound. Havilah level on the western slopes of the colony. Scouring estab-

excellence of its soil for the growth of imported grasses. At an altitude of 3,200 feet above sea-level, and situate in latitude $29^{\circ} 17'$ S., longitude $151^{\circ} 37'$ E., with a mean annual rain-fall of 39.48 inches in and around the neighborhood. This fleece is a superb combing merino, scoured, and is an excellent type of New Zealand wools; value in Sydney 1887-'88, 17*d.* (34 cents) to 18*d.* (36 cents). The water-shed of this district is the Severn River, flowing toward Queensland, and the Darling River.

Sample 6, Tarrenco, Burrowa.—Grown in the district of Young, about 220 miles southerly from Sydney, on the head waters of the Lachlan River, flowing into the Murrumbidgee River; in a very healthy sheep district with a fine climate about 1,500 feet above sea-level; sheep paddocked and fed on indigenous grasses only; station situated in latitude $34^{\circ} 27'$ S., longitude $148^{\circ} 46'$ E., having a mean annual rain-fall of 21.89 inches, and an area of 4,200 acres, carrying 3,300 sheep, entirely breeding; a very carefully bred flock, originally from imported Saxon merino ewes and Mudgee (Havilah) rams, and latterly an infusion of Tasmanian blood. This fleece may be described as a superb combing greasy merino fleece; Sydney value, 11*d.* (22 cents) to 11½*d.* (23 cents) per pound.

Sample 7, Barsham, Murrurundi.—Grown in the Upper Hunter district of New South Wales, 190 miles from Sydney, on the northern slopes of ridges on tributaries to the Page River, flowing into the Hunter eastern waters; on rung-timber paddocks at considerable altitude, about 1,500 feet above sea-level; sheep paddocked, feed on natural grasses only; Barsham situated in latitude $31^{\circ} 50'$, longitude $150^{\circ} 50'$ E., having an average annual rain-fall of 30.35 inches, and on an area of 18,000 acres carrying 11,200 sheep, mostly breeding; bred from very select Mudgee sheep, and possessing their best characteristics in a different soil and climate, and ranging from 7 to 8 pounds per sheep. This fleece is a superb combing greasy merino, and valued in Sydney at 9*d.* (18 cents) to 10*d.* (20 cents) per pound.

Sample 8, Galga, Coonamble.—In the Western Liverpool Plains district of New South Wales, 300 miles north from Sydney; grown on open grassy plains of chocolate soils, interspersed with belts of scrub and slight ridges on the western water-shed of the colony at the head of the Castlereagh River, flowing into the Darling, and at an altitude about 900 feet above the sea-level; sheep fed on natural indigenous grasses only; station situated in latitude $31^{\circ} 7'$ S., longitude $148^{\circ} 44'$ E., having an average mean rain-fall of 19.80 inches, and an area of 142,000 acres, carrying, generally, 68,000 sheep, breeding and fattening. This fleece is a strong combing merino, bred on fattening country from the finer Mudgee type of sheep; used largely in London manufactures, and a fair specimen of western and northwestern interior wools average value in Sydney, 1887-'88, 7½*d.* (15 cents) to 8½*d.* (17 cents) per pound. All these exhibits belong to the Sydney, New South Wales, market, and indicate a class of merino wools suitable for United States requirements. The values are, at Sidney, ruling prices for last season, and, as a general rule, London values show an advance of

Sample 9, Killeen.—A second combing cross-bred fleece in grease from the northeast district of Victoria, grown on heavily timbered, but fair grazing country; value in Melbourne, 1887-'88, $7\frac{1}{2}d.$ (15 cents) per pound.

Sample 10, Decameron.—A first combing greasy merino fleece from the western district of Victoria, grown on splendid sheep country, mostly open plains, well watered and very rich soil; value in Melbourne, 1887-'88, $10\frac{3}{4}d.$ (23 cents) per pound.

Sample 11, Bull's Plains.—Grown in the Riverina district of New South Wales, near Cowea, 454 miles southwesterly from Sydney, near the Murray River and the Victorian border; very heavily grassed plains country, about 360 feet above the sea-level. Sheep paddocked and fed on natural grasses only, principally fattening. Station in latitude $35^{\circ} 50' S.$, longitude $146^{\circ} 5' E.$, having a mean annual rain-fall of 17.68 inches, and an area 24,000 acres, carrying over 15,000 sheep. These Riverina merino sheep have very large frames and carry heavy fleeces. The wool from the Riverina and Southern districts of New South Wales finds its way principally to the Melbourne markets. It is a first combing, greasy merino fleece, and an average sample of these wools. Value in Melbourne, 1887-'88, $9\frac{1}{2}d.$ (19 cents) per pound.

Sample 12, H. L. A.—A first combing, greasy, cross-bred fleece from the northwestern district of Victoria, grown in a good fattening district, in open country interspersed with belts of timber. Exhibit burry. Value in Melbourne, 1887-'88, about $11\frac{1}{4}d.$ (22 cents) per pound.

Sample 13, R.*—A supercombing, greasy merino fleece, from the western district of Victoria, grown on very rich soil and open plains country. Value in Melbourne, 1887-'88, $12\frac{3}{4}d.$ (25 cents) per pound.

Sample 14, Kanumbra.—A first combing, greasy merino fleece from the northeastern district of Victoria, grown on heavily timbered but fair grazing country. Value in Melbourne, 1887-'88, $9d.$ (18 cents) per pound.

Sample 15, Woodside.—A first combing, greasy merino fleece from the western district of Victoria, grown on rich soil and open plains country. Value in Melbourne, 1887-'88, $9\frac{1}{2}d.$ (19 cents) per pound.

Sample 16, T. T. W.—A fine combing, greasy merino fleece from the northwestern district of Victoria, chiefly a fattening district. Value in Melbourne, 1887-'88, $9d.$ (18 cents) to $10d.$ (20 cents) per pound. They show the class of wool produced in Victoria, of which Melbourne is the chief depot. They are suitable for United States markets.

Sample 17, Paratoo, South Australia.—Grown 185 miles north of Adelaide, on the Gowler water-shed. Sample of 191 bales, combing, greasy merino, sold in Adelaide, 1887-'88, at $6\frac{1}{4}d.$ (12 cents) per pound. This station cut 147,000 fleeces that year. Stud flocks averaging 8 pounds 7

giving an average, including breeding ewes, of 9 pounds 4 ounces of wool per sheep, whilst stud-rams cut from 15 pounds 10 ounces to 20 pounds 1½ ounces, and the clip realized from 11*d.* (22 cents) to 12*d.* (24 cents) per pound in the grease.

Sample 19, Canowie, South Australia.—Grown 190 miles north of Adelaide, toward the Gowler ranges, on rolling downs country and chocolate soil. Strong combing, greasy merino fleece valued in Adelaide at 8*d.* (16 cents) to 10*d.* (20 cents) per pound. This station cut over 52,000 fleeces last year, giving an average of 9 pounds 14 ounces of wool per sheep, and 3 pounds 13 ounces per lamb, which is an excessive return from an almost exclusive breeding. Flock has maintained a great reputation for many years.

Sample 20, Hill River stud flock, South Australia.—Strong combing, greasy merino, subject to similar remark as No. 18, from the same flock. These exhibits from South Australia represent the very strong, lustrous merino, cultivated on particularly rich, fattening country, and being within a radius of each other near Adelaide, may be described as grown approximately in latitude 24° S., longitude 138° 30' E., and at an elevation of 1,200 feet above the sea-level; mean average rain-fall of 21 inches. Great competition exists between these renowned flocks annually as to their respective yields, weights of fleece (in grease and scoured), and market values realized.

Sample 21, Buccleuch, New Zealand.—Grown on downs country; light, loamy soil, laid down with English grasses in the Canterbury district; described as fine combing, greasy merino. Value in Christchurch, season 1877-'88, at 10*d.* (20 cents) per pound.

Sample 22, G. H. Bangor, New Zealand.—Grown in plains; country light; soil laid down with English grasses in the Canterbury district; described as fine quarter-bred Leicester and merino. Value at Christchurch, season 1887-'88, at 10½*d.* (21 cents) per pound.

Sample 23, Gunn, New Zealand.—Grown on high altitude, on rich, loamy soil; laid down with English grasses in the Canterbury district; described as fine-bred Leicester and merino. Value at Christchurch, 1887-'88, 10*d.* (20 cents) per pound.

Sample 24, G. H. Bangor, New Zealand.—Grown in the same country as No. 22, but described as coarse, half-bred Leicester. Value at Christchurch 10*d.* (20 cents). The New Zealand exhibits represent classes of wools grown in different climates and pastures. The average rain-fall in the Canterbury, New Zealand, district is given at 24 inches. —SYDNEY, August 6, 1888.

G. W. GRIFFIN,
Consul.

RAILROADS IN COSTA RICA.

GERMAN IRON PRODUCTION.

The German iron production during the first six months of the current year is officially reported as follows:

	Tons.
Puddled pig and spiegel iron.....	1,050,860
Bessemer pig	191,029
Soft steel	617,941
Foundry pig.....	240,884
Total production of pig-iron	2,106,714
Total production during same period, 1887.....	1,748,481

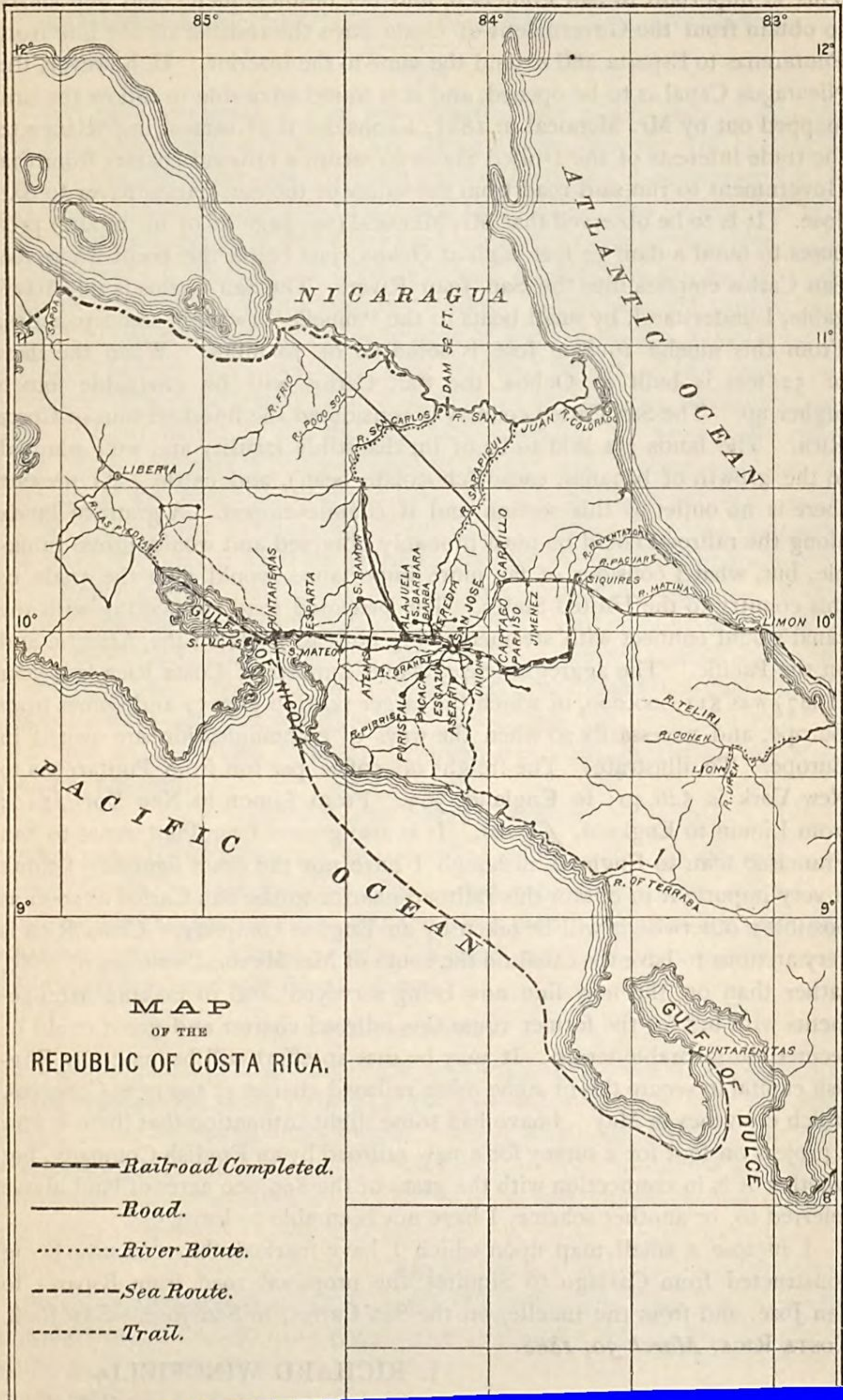
The advancing quotations for industrial shares, notwithstanding the general situation of the iron and steel industries, is far from being satisfactory. The cause of the unsatisfactory condition of these industries is the high price for raw material. In this respect the different departments—coal, coke, ores, pig-iron, rolled iron—are shifting the responsibility from one to another. During the last eighteen months the following price advances have taken place: Coal, 10 per cent.; coke, 25 to 43 per cent. The price of puddled pig has risen from 41 marks to 50 marks, although that price has declined again of late.

RAILROADS IN COSTA RICA.

The railroads already completed in Costa Rica are:

1. From Port Limon to Corrillo, 70 miles—Corrillo being connected with San José by a steep mountain cart-road, a distance of 28 miles.
2. The road from Cartago to Alajuela, passing through San José and Heredia; total length, 25 miles.
3. From Puntarenas to Esparta, 12 miles—Esparta being connected with Alajuela by a mountain cart-road, a distance of 35 miles.

To complete the connection with Port Limon, there is now being constructed 50 miles of new road from Cartago to a point near Siquires, on the Reventazon river. This new road is about one-third done. According to the terms of the contract with Mr. Minor C. Keith (contractor), it should be completed August, 1889, but Mr. Keith has had many difficulties to contend with, and it is not probable that it will be completed before August, 1890. The road from Port Limon to Corrillo (No. 1), from Cartago to Alajuela (No. 2), and the new line from Cartago to Siquires, together with the wharf at Limon, have been transferred to and are owned by the "Costa Rica Railway Company (Limited)," of London. The Government of Costa Rica also granted to said company 800,000 acres of unimproved lands. The Government now owns, however, one-third of the stock of said company. The Government also owns and operates the railroad from Puntarenas to



This is important to San Francisco, and her business men could well afford to obtain from the Government of Costa Rica the transfer of the line from Puntarenas to Esparita and extend the same to the interior. If, however, the Nicaragua Canal is to be opened, and it is found advisable to follow the line mapped out by Mr. Menocal in 1885, I consider it of utmost importance to the trade interests of the United States to secure a railroad charter from this Government to run said road from the valley of the San Carlos River to San José. It is to be observed that Mr. Menocal (see page 26 of his report) proposes to build a dam 52 feet high at Ochoa, just below the point where the San Carlos empties into the San Juan River. The San Carlos is now navigable, I understand, by small boats to the "muelle" (wharf), some 30 miles. From this muelle to San José is some 60 or 70 miles. When the dam of 52 feet is built at Ochoa the San Carlos will be navigable much higher up. The San Carlos country is considered the finest section of Costa Rica. The lands are said to be of inexhaustible fertility and well adapted to the growth of bananas, cacao (chocolate bean), and cattle. At present there is no outlet to this section and it is undeveloped. A grant of lands along the railroad could be most probably obtained and would prove valuable, but, what I consider of far more importance, would give the trade of this country to the United States. The proposed road connecting with the canal would connect with steamers going both to ports on the Atlantic and on the Pacific. The aggregate exports and imports of Costa Rica last year (1887) was \$11,000,000, of which the larger portion goes to and comes from Europe, and necessarily so when the ways of communication are owned in Europe. To illustrate: The freight on coffee per ton from Puntarenas to New York is \$26.40; to England, £3. From Limon to New York, \$10; from Limon to England, £1 10s. It is also greater from Puntarenas to San Francisco than to England, although I have not the exact figures. I think it very important to obtain this railroad charter to the San Carlos as soon as possible; otherwise it will be taken by an English company. Costa Rica is very anxious to have the canal on the route of Mr. Menocal's survey of 1885, rather than on the new line now being surveyed, and in making arrangements with her for the former route this railroad charter and grant could be secured on favorable terms. It may be that an effort will be made by English capital to secure this or some other railroad charter at the next Congress, which convenes in May. I have had some slight intimation that there is now a project on foot for a survey for a new railroad by an English Company, but whether it is in connection with the grant of the 800,000 acres of land above referred to, or another scheme, I have not been able to learn.

which I have marked the road now being

Esparita to

COMMERCIAL ECONOMY OF HAMILTON, ONTARIO.

COAL.

Near \$200,000 worth of coal was imported last year, a duty of \$49,089 being collected upon soft coal. The importations this year will be heavier than for any preceding year, due not only to increased consumption by increase of population, but also to the fact that dealers were caught last year with inadequate supplies, and every yard was swept clean by the close of the winter season. There is, in consequence, a tendency to go to the other extreme this year of overstocking the market. The increased supply from United States collieries, in the judgment of leading dealers, may be safely estimated as high as 25 per cent. over the fuel import of last year. All local dealers have increased their storage room by building additional coal sheds. The removal of the duty on hard coals had no perceptible effect upon prices, the market being controlled by the coal combine and coal exchanges in the principal coal markets. In city contracts for large orders the price is fixed by a committee of the coal exchange in some instances, and when the price is fixed the contract may be awarded, either by auction or by drawing lots. Such a contract was sold by auction last year in one leading city, and the premium paid was divided evenly among the members of the association. The local and Dominion government contracts are open to competition. The price for the Ontario government contract for the insane asylums last year was \$4.98 per ton of egg coal, then being sold at retail for \$6.30. This contract, however, was filled in the spring when business was dull.

COTTON AND COTTON FABRICS.

An importation of cotton manufactures to the value of \$83,772 from Great Britain, against \$38,658 of imported values in cotton and fabrics from the United States shows that the latter is still unable to compete with England. Cotton shirting, which ten years ago cost here from 12 to 13 cents a yard, is now sold for 75 cents.

EARTHENWARE.

The bulk of it is imported from Europe, only \$2,842 in values of imported earthenware being credited to the United States. The duty collected, mainly from European importations, amounted to \$20,410 for the year. The duty is 35 cents. The whole duty paid in 1887 on brown or colored earthen or stone-ware, and Rockingham ware, and on all granite or iron-stone ware was about 10 cents per family.

FISH.

Fish, including oysters, to the value of \$32,639 were imported from the United States—chiefly from Boston and Portland.

GROCERIES, PROVISIONS, AND FRUITS.

The comparatively large importation of breadstuffs from the United States includes such goods as biscuits, crackers, ginger snaps, cracked wheat, and other cereals prepared in a superior manner in the United States. Under the head of provisions, of which \$26,490 were brought over last year, is included canned goods (in which American packers beat the world), such as meats and soups, with hams, bacon, and lard from Chicago. Baking powders come chiefly from Detroit, Chicago, and Albany. Considerable flour used to be imported from Minnesota, but the large wheat supply from Manitoba and the increase in the number of roller-process mills now confine the trade to the native product. Large importations of starch are made annually—chiefly from Oswego. What sugars are not supplied from Montreal refineries are bought out of bond in New York, as coffees and teas are supplied, which are enumerated as importations from the United States. The bulk of pickles are brought from England, not because of lower price, for they are costlier, but by reason of the reputation of the English pickle. In dried fruits the United States have the call over other countries. Finer classed goods, such as apricots, plums, and raisins, are imported from California, whose products are gradually supplanting Spanish goods. As has been already mentioned, the green fruit importations have been largely increased by the removal last year of the Canadian duty on green fruits. California, Delaware, and the Southern States are the places of production.

HATS AND CAPS.

“Honors are easy” as between England and the United States in the extent and value of imported hats and caps. Nearly every furnishing and hat firm handles some American goods—the styles being preferred by many. The English goods are bought generally through jobbing houses in Toronto and Montreal. Hats and caps are cheaper now than when the duty was lower—probably due to American competition.

JEWELRY, CLOCKS, AND WATCHES.

The class of jewelry imported from the United States is generally of rolled gold, bought of Rhode Island manufacturers. The Meriden Britannia Company has established a factory in this city to escape, as it is alleged, the American tariff on nickel, which is free in Canada. The wares of this factory are handled by all local jewelers. Except a few French clocks all the clocks sold here are imported from the United States—chiefly from Waterbury, Conn. Of watches only the movements are brought in from the United States. All the manufacturers are affiliated with the Toronto Association.

There are three watch-case factories in Canada. Two of the
 At their last meeting article

til such manufacturer or association shall have become affiliated in membership with either the American Association of Manufacturers or with this association."

LEATHER BOOTS AND SHOES.

Boots and shoes of the coarser material and fashion are almost exclusively made in the Dominion. The finer classes of goods are imported from the United States, and nearly all dealers handle American goods. Leather of finer finish is also imported, especially for harness and saddlers' goods. Patent leather is made at a factory at Oakville, near this city. Rubber goods are imported from the States, and some supplied from Montreal. The American-made kid and calf shoes are preferred because of their neater finish and more dressy appearance.

METALS AND HARDWARE.

Builders' hardware and tools and small agricultural implements are the chief importations from the United States. The English importations consist largely of merchant bar iron and cutlery. The United States importations are about equal in this part of Canada. The steady development of home enterprises, like the Peterboro' Lock Company, is reducing the importation of builders' hardware. The American Screw Company, of Providence, has built a large factory in this city because of the low tariff on iron. The Hamilton Steel-Wire Nail Company has been formed, having for its object the manufacture of all standard sizes of common and barbed steel nails, molding nails, brads, copper, iron and steel shoe nails, and rivets. Six new machines of improved pattern have been purchased in the United States. These are automatically fed and manufacture the nails from the wire. Bells for churches and buildings are imported from the United States. The domestic demand for bells would justify the establishment of a local foundry. Cast-iron hollow-ware, granite, and enameled sheet-iron vessels are imported largely from the States. The saws imported from the States are mostly hand-saws. There is a factory at Galt, which is run to its full capacity supplying circular and hand saws. The company is an American company. Copper, zinc, and tin are generally imported in sheets and manufactured here. Manufactures of brass are imported from the United States, such as plumbers' goods, lamps, chandeliers, etc. An American firm has built a factory here for manufacturing lanterns, pressed and stamped ware.

MUSICAL INSTRUMENTS.

In this class of importations there are credited to the United States values to the amount of \$16,084, against some \$3,000 from Europe. The bulk of the importation from the States consist of pianos and cabinet organs. Brass and reed instruments are generally brought from France and Germany.

SEEDS.

There were imported from the United States, during the past year, \$35,252 of seeds, such as clover, timothy, and other grasses, onion, corn, cucumber, and melon seeds. An increased importation is the result of crop failure in the Dominion, coupled with the removal of the Canadian duty on seeds, though, as before stated, the demand is affected by crop results rather than by high or low tariffs.

WOOD AND WOODEN WARES.

Hubs, spokes, and fellows, and some buckets, are imported, together with hard woods for cabinet work, hickory for spokes, walnut, cherry, etc. Carriage makers throughout the Dominion are compelled to import hickory for spokes, rims, and other parts of carriages from the United States, because they can not get it in Canada, and the import grows larger year by year as the manufacture of carriages increases. Every stick of imported hickory is of second growth, and almost the whole of it grows in Ohio and Indiana; and much of the imported walnut has been planted in the United States by men not yet old. Herein lies a suggestive hint to tree-planters.

WOOLEN MANUFACTURES.

Woolen fabrics to the value of \$321,521 were imported last year from Great Britain, and \$12,340 from other European countries, against only \$4,000 from the United States. The European importations were made up largely of tweeds, underwear, stockings. How the American merchant and manufacturer may enlarge his trade with Canada may be summed up in four words, viz, "good goods" and "low prices." The American goods excel in quality. The trouble with the price is to counterbalance the Canadian tariff on one hand and English cheap labor on the other. As was stated in a previous report, the tariff constitutes the chief barrier to a larger trade. While many consumers in Canada, especially agriculturists, wish the tariff reduced, or entirely removed, the manufacturers, in the main, are clamorous for its retention. Pending the discussion of the commercial-reciprocity issue at the last Parliamentary session, one Ontario representative quoted replies from an extensive correspondence with Hamilton manufacturers, all to the effect that any modification of the tariff policy would be hurtful. A sample of these replies is appended, as for example:

Commercial union would kill our forge and preside at the funeral of our rolling mills.—
T. D. Beddoe, manager of the Hamilton Iron and Forging Company.

Commercial union would utterly destroy the pipe industry and certainly lead to annexation.—*Alex. Gartshore, Canada Pipe Works.*

Under commercial union we would have to shut down our works entirely.—*Ontario Rolling Mills Company.*

... business in carriage and saddlery hardware and
... Milne.

Unrestricted reciprocity would close every sewer-pipe factory in Canada.—*Canada Sewer Pipe Company.*

The furniture trade would be severe sufferers, more particularly the manufacturers, for the following reasons: The American factories are now nearly all large joint stock companies with large capital, and have all the advantages in purchasing that capital gives. From their large output they have the division of labor so fine that the cost of production would be and is much less than we can hope to arrive at here with a limited production and output. Our manufacturers are only now getting nicely on their feet. The large concerns would wipe them out before we could change our style of business to the change of market.—*J. Hoodless & Son.*

Unrestricted reciprocity would be hurtful to the country and ruinous to our business.—*Osborne-Kibbey Manufacturing Machinists Company.*

We consider that commercial union would be most disastrous to our interests.—*Hamilton Cotton Company.*

We believe it would destroy the manufacturing part of it, and resolve us into traders or agents for western houses.—*F. W. Fearman, pork, bacon, and lard packer.*

We should have to share the market here with little prospect of entering the American market; the effect would be ruinous.—*B. Greening & Co., wire workers.*

Were unrestricted reciprocity or commercial union to come into force we would at once remove our business to the United States.—*D. Morton & Son, soap makers.*

CROP STATISTICS.

With good crops in Ontario and the subsidence of political excitement in the United States next year, the prospect is fair for an increased trade. The report of the Ontario bureau of statistics for August, compiled from official returns to the 25th of June, 1888, shows the fall wheat yield to be below the average. Reports regarding spring wheat are more favorable than for some years past. The only injury it received worth mentioning has been from slight drought in a few places. Upwards of 80 per cent. of the reports are favorable. The area sown, however, shows a decrease from 484,821 acres, in 1887, to 367,850 this year. Barley is reported good as regards yield and size of berry. Oats give a satisfactory return in the western lake counties of Ontario and in a large portion of the west midland group. Reports are unfavorable from the east midland and St. Lawrence districts. Comparatively little rye is grown in Ontario. Generally it has proved a good crop. Peas are reported good all over. The presence of the pea-bug is reported only in some of the Lake Erie counties. Corn is a better crop than for years past, while most encouraging reports are given of beans. Roots and fruit are fairly good.—HAMILTON, *August 24, 1888.*

ALBERT ROBERTS,
Consul.

GRAIN CROPS IN EUROPE.

The International corn market was held at Vienna August 26, and was more largely attended than in the sixteen former years. About 9,000 persons from all countries of Europe were in attendance at the opening, notwithstanding that on the same day and hour another international corn

coming to Vienna. After the official speeches of the representative of the Government and the president of the chamber, the secretary of the latter, M. Leinkauf, read the customary report upon the crop estimations of all important countries. It is the sixteenth year that this report has been compiled, and its general accuracy is recognized.

The secretary of the Corn Bourse, M. Leinkauf, beginning with the corn crop of Austria and Hungary, said that the provinces of Hungary, excluding Austria, had cultivated with wheat an area of 2,790,571 hectares. It is estimated that this will give 27 per cent. more than a full average crop, or 3,500,000 hectoliters more than the average, only $8\frac{1}{2}$ per cent. of the area being under the average. In respect of quality, the weight is above the average, while the color is good.

In Austria the area cultivated with wheat amounted to 1,164,067 hectares, of which 50 per cent. have yielded a crop of more than average. The surplus of wheat for export will amount to about 1,000,000 hectoliters.

The crop of rye in Hungary extends over 1,411,570 hectares, of which 11 per cent. (Transylvania) show a crop over the average, and 75 per cent. average. It is estimated that Hungary has in this cereal a deficit of 2,750,000 hectoliters. Precisely the same is the case in Austria. The rye area comprises 2,009,490 hectares. The crop is estimated at 2,250,000 hectoliters less than the average.

The result of the barley crop is not very satisfactory. Hungary has an area cultivated with barley of 1,048,981 hectares, yielding 2,500,000 hectoliters less than the average; the quality is first rate. In Austria an area of 1,131,678 hectares has been cultivated with barley, of which $30\frac{1}{2}$ per cent. gave a crop of over the average, $18\frac{1}{2}$ per cent. average, and 51 per cent. below the average. The deficit is estimated at 750,000 hectoliters.

In Hungary the crop of oats is not quite satisfactory. One million two hundred and fifty-nine thousand six hundred and seventy hectares have been cultivated, of which 14 per cent. gave more than the average, 30 per cent. average, and 56 per cent. less than the average. The total deficit is estimated at 3,000,000 hectoliters. In Austria, on the other hand, 1,874,771 hectares were cultivated with oats, which gave a surplus over the average of more than 1,000,000 hectoliters. The prospects of the maize crop are very good in Hungary, in Austria below average. The total result in Austria-Hungary gives a surplus of 4,100,000 hectoliters of wheat ready for export, and a deficit of 5,000,000 hectoliters of rye, of rather more than 3,000,000 hectoliters of barley, and 2,000,000 hectoliters of oats.

The average crops during the last ten years in Austria and Hungary, com-

	In 1888, Per cent.
Austria :	
Wheat, average 15,000,000 hectoliters (= 100)	107
Rye, average 27,000,000 hectoliters (= 100)	92
Barley, average 17,500,000 hectoliters (= 100)	96
Oats, average 34,500,000 hectoliters (= 100)	103

The results of the crops of the other countries have been compiled by an official commission, which gives the following figures, the average taken at 100 :

Country.	Wheat.	Rye.	Barley.	Oats.
Austria	107	92	96	103
Hungary	110	85	84	85
Prussia	90	74	94	96
Saxony	95	82	90	90
Bavaria, provinces of Franconia and Suabia	88	79	97	107
Palatinate :				
Upper	102	80	100	120
Lower	75	65	100	105
Baden	85	60	85	110
Württemberg {	76			
{	95	70	100	109
Mecklenburg	98	80	100	100
Denmark	80	90	130	125
Norway and Sweden	95	90	95	90
Italy	75			65
Switzerland	78	78		100
Holland	82	72	87	107
Belgium	82		90	
France	80	85	85	100
Great Britain	78		99	100
Russia :				
Padolia	80	60		100
Bessarabia	125	75	100	51
Poltava	87	72	82	92
Middle	85	80	75	90
Central Russia :				
Cherion	120	120	120	120
Courland	95	85	90	90
Esthonia	92	82	82	72
Roumania :				
Moldavia	130	130	125	
Little Wallachia	100	80	80	80
Great Wallachia	120	100	95	90
Servia	120	90	90	70
Egypt	110		75	

The crop of wheat in India was estimated in 1887 at 6,390,000 tons; in 1888 it is estimated at 7,255,000 tons, the average crop is being estimated at 7,197,000 tons. The United States of America had in 1887 456,000,000 bushels of wheat and 1,456,000,000 bushels of maize; in 1888 the estimates are 420,000,000 bushels of wheat and 2,000,000 bushels of

CHINESE SALT.

Chinese salt is produced in the flat, marshy country on the east coast of Kiang-Su province. These marshes cover an area of several hundred square miles. There are thirty-six principal salt-flats. It is all produced by evaporation in flat pans heated by burning dry seeds and brushwood, and is of two qualities only, the upper layer, a brownish-white, the superior, and the lower a dark-brown, the "peoples' salt." It is principally evaporated in the autumn and spring. The cost of production is 2 cash per catty; 1,040 cash are equal to a Mexican dollar; a catty is $1\frac{1}{3}$ pounds. The salt is sold to the merchants at a fixed rate of 3 cash per catty, which is determined by the Government. The duty (lekin) and official charges thereon amount to about 45 cash per catty. It is retailed at from 50 to 52 cash per catty, according to locality.

Salt cannot be sold or consumed in the province where it is produced. This law is with a view of increasing the "squeezes" and emoluments to the Government officials. Kiang-Su salt is exported principally to the provinces of Anhui, Kiang-Si, Hupeh, and Honan. Evaporated salt is produced also in the provinces of Chê-Kiang, Szechuen, Kuantung, and Shantung.

Ching-Kiang receives its salt from Chê-Kiang, as it is nearer and the transportation cheaper. Salt is exported in junks of from 400 to 1,000 piculs (a picul is $133\frac{1}{3}$ pounds) carrying capacity, and is packed in straw bags of 84 catties' weight. Merchants desiring to engage in the salt business must produce the best references at the salt commissioner's yamen at Yangchau. They must further deposit with this official a sum proportionate to their proposed transactions, which deposit, in each case, amounts to several thousand dollars. The permits to trade are drawn by lottery; in case of banks the deposit is refunded.

Each permit is for about 800 pounds of salt. The principal or official salt merchants obtain their licenses from the board of revenue at Peking, and they hold during their lives. They are accounted rich men, reside mostly at Yangchau, and live in fine style, fine houses, and have numerous servants. The business is, therefore, considered lucrative. There are scarcely ever any failures in this trade; it is carefully and fairly conducted, and only by merchants of the highest standing. A very small quantity is smuggled, as all craft are carefully and frequently searched as they pass along the river and canals. Sometimes it evades the revenue when carried in foreign steamers and sailing vessels.

The salt commissioner resides at Yangchau, a mandarin of the third rank and wears a blue button. His fixed salary is 4,000 taels per annum; ~~added~~ to be worth, in one way and

and the traffic give employment to many thousands of people. The wages of the people employed on the junks in the transportation of salt are \$2 and \$3 per month. The captain, or chief man of the boat, receives \$4 per month. The workmen at the salt flats receive from \$3 to \$4 per month, the employers providing them with rice, which is their chief food. Their wants are few, their expenses nominal, and they live on and are contented with these wages.

In some cities salt is peddled about the streets by blind men, who have the monopoly of this business. No one is allowed to interfere with them or enter into competition. Though I requested information as to the quantity of the annual product of salt from all the works, or any of them, the value, etc., I was unable to obtain it, and therefore can not furnish in these notes any statistics. The quantity and amount of sales, however, must be very great to supply this vast population, to create such a revenue, and to enable all those concerned in the management and trade to grow so rich.

In evidence of the large sums realized in the salt manufacture I read in a late number of the Peking Gazette that the salt revenue of the province of Chê-Kiang was required to forward the following assessments to Peking during the current year: Peking subsidy, 200,000 taels; imperial household fund, 50,000 taels; frontier defense expenses, 60,000 taels; and for the purchase of ginseng, 10,000 taels.—CHING-KIANG, CHINA.

A. C. JONES,

Consul.

GERMAN PLANTATIONS IN SAMOA.

The German plantations in Samoa comprise the greater part of the cultivated land on the north side of the Island of Upolu. Four of them are in the immediate vicinity of Apia, to the south and east, and the remaining two are further down the coast, towards Savaii, the largest (Mulifauna) covering the entire western end of the island, with an area of 3,260 acres and a sea frontage of more than 6 miles. Formerly there was a plantation on Savaii planted with cocoa-nuts, but this has been given up, the trees bearing poorly, owing to the recent volcanic origin of the soil, which is too strong for vegetation.

The total area of these plantations is 9,260 acres. Their natural features are very diversified; from the sea they extend far up the mountain sides, down which flow numerous large streams. They have been laid out with great care; broad avenues intersect them and lead along the coast, and in beauty of scenery and of rich fertility the views among these can not be surpassed.

The plantations are highly cultivated, and are capable of producing anything that will grow in the tropics. They are mainly planted with cocoa-nuts, for the production of copra, the dried kernel of the nut. The annual

The clearing of the land for the plantations is a laborious operation, for the land in Samoa is densely wooded with a tough native growth. There are also many rocks, which prevent plowing. After clearing, cotton is planted, and this is grown for three years; then cocoa-nuts are planted and grass is sown, and until the trees are large enough to allow cattle to be run among them some cotton is still gathered. After six years cattle are admitted, for by this time the trees have grown and cattle can not reach the heart, the only part which they can hurt. The seventh year the trees begin to bear, and at fifteen years after planting they attain their prime. The grass grows luxuriantly, for drouth is unknown in Samoa, and cattle find among the cocoa-nut trees rich feeding-ground. On the largest two plantations there are 1,600 head of cattle, many of them of good breed, imported from New Zealand and the Australian colonies. There are also some fine horses upon them.

Next to cocoa-nuts and cotton, coffee is the most important product of the plantations, and its cultivation is being increased, for it is the best paying crop. At the Utumapu plantation 300 acres are under cultivation with coffee, and 150 acres are being prepared for it. Last year the coffee crop of this plantation was 90,000 pounds. The coffee is cleaned at a mill run by water-power, when, after being rolled between two stones, it is trodden in vats by labor boys; it is then dried by hot air. The coffee is of an excellent quality, rivaling the finest Mocha, and commands a good price in the Hamburg market, where it is chiefly sent.

These plantations are worked by imported labor, for the Samoans will not work. This labor is recruited chiefly from the islands to the west of here, the New Hebrides, Solomon, New Britain, and New Ireland islands; also from the Ellice and Gilbert islands, to the north. This traffic, of which so many dark stories have been told of cruelty, is not yet robbed of all its horrors, although the efforts of the English and German Governments have done much to lessen them. Many laborers are secured by questionable practices—enticed on board recruiting vessels by fair promises that are never fulfilled, or kidnapped by overturning canoes of the more venturesome who have come too near the vessels, and thus capturing the unfortunate natives while struggling in the water. German gun-boats sometimes help the recruiters, by delivering over to them prisoners taken in chastising native villages. As a rule, however, the labor trade is humanely conducted by the German labor vessels coming here. The vessels belong to the Deutschen Handels und Plantagen Gesellschaft, known as the German firm, which is the owner of the plantations here. The laborers are under contract for three years' service, at the expiration of which time they are to be returned to their homes. This, however, is sometimes not done, and the unfortunate

...kill or enslave them.

sign a regular contract with the agent of the firm. When there is no commissioner the contract is made by the agent and inquired into by the German consul later.

On arrival at Samoa the laborers pass an examination before the consul, and great care is taken that none come on shore against their will. They are well cared for upon the plantation. A physician visits each plantation at least once a month. They are well housed and fed on rice, biscuits, and yams, bread-fruit, taro, etc., native food, which they prefer. Their hours for work are regular and Sundays are given them as holidays. There are about seven hundred and fifty of them upon the different plantations. The following is a list of plantations, with statistics of the same :

Mulifauna.—Area, 3,260 acres; 900 acres are under cotton in full bearing; the yearly production of this is 700,000 pounds. There are here 700 head of cattle and 560 laborers.

Vartele.—Area, 1,780 acres; 780 acres under cultivation with cotton, full bearing; 980 acres of young cocoa-nut trees; 20 acres under grass. Last year the cotton crop was 500,000 pounds. The plantation is worked by about 350 laborers.

Vaitele.—Area, 2,800 acres, nearly all under cocoa-nuts, the most of them in full bearing. Copra crop last year was about 400 tons. The whole plantation is used for cattle; number of cattle, 900; number of laborers, 156.

Vaivasa.—Area, 700 acres, all under cultivation; 150 acres cotton, balance in cocoa-nuts; number of laborers, 50.

Mutuatua.—Area, 270 acres; 70 acres cotton, balance under cocoa-nuts, all bearing; number of laborers, 34. This plantation is the private property of Theodore Weber, Esq.

Utumapu.—Area, 450 acres; 300 acres under coffee, balance cleared and being prepared for coffee; crop last year, 90,000 pounds. On this plantation are 1,200 cacao trees, now bearing. Number of laborers, 170.

HAROLD MARSH SEWALL,
Consul-General.

APIA, SAMOA, *August 15, 1888.*

WINE FROM BERRIES AND FROM DRIED GRAPES.

The want of a good wholesome and cheap domestic beverage is very general in the rural districts.

There are numerous factories in Germany which, under the name of "artificial wine" (*Kunstwein*), introduce beverages into the market which are intended to satisfy this want. But these factories of artificial wine have their very doubtful point, inasmuch as great quantities of their productions, when they get into the second or third hand, are sold as genuine wine.

In order to avoid paying a good price for an inferior article, the farmer may, with some attention and industry, prepare himself his own domestic beverage, and have thus a much better and cheaper article than he can buy in the factory under the name of artificial wine, or as wine, if he buys it from an agent.

For the manufacture of a good domestic beverage different sorts of fruits, the residuum of pressed grapes, wine-press-fruit, etc., are used.

WINE FROM BERRIES.

Currants and gooseberries yield almost every year a good crop, and even on a small area of land they furnish so much fruit that, by adding the necessary water and sugar, a great quantity of wine can be produced. Whortleberries are very abundant in some districts.

The price of sugar being rather low the expenses are but small. For 1 hectoliter (nearly 26½ gallons, wine measure) of good domestic beverage, sugar for only about 7 or 8 marks is wanted (\$1.75 to \$2).

The berries contain too little sugar and, with the exception of thoroughly ripe blackberries and sweet cherries, too much acidity. The acidity must, therefore, be attenuated and sugar added. If too little water is used the wine becomes too sour.

At the exposition in Bruchsal, Baden, in April of this year, all the new sorts of price-wines and seven of twelve wines having received diplomas were attenuated with water in the proportions given below.

The wine becomes stronger or weaker according to the quantity of sugar added. By adding too little sugar the wine becomes weak and not durable.

The subjoined table shows the average contents of sugar and acid in the different sorts of fruit, and also the addition of water and sugar necessary for 10 liters of juice or 11 kilograms of fruit, in order to make either a weak kind of artificial beverage, a good table wine, or a liquor wine:

Fruits.	Contents in 100 parts of fruit.		Addition to 10 liters juice, or 11 kilograms of fruit.				
	Sugar.	Acidity.	Water—liters.	Sugar—kilograms.			
				Domestic beverage.	Table wine.	Strong wine.	Liquor wine.
Currants.....	6.4	2.1	30	4.2	5.8	7.4	1.3
Gooseberries	7.0	1.4	18	2.7	3.7	5.1	8.8
Blackberries	4.0	0.2	.....	0.8	1.2	1.6	3.0
Whortleberries	5.0	1.7	24	3.6	5.0	6.3	11.0
Raspberries.....	3.9	1.4	18	3.0	4.1	5.2	9.1
Strawberries	6.3	0.9	8	1.6	2.3	3.0	5.5
Red bilberries.....	1.6	2.3	35	5.3	7.1	8.9	15.2
Agriot cherries.....	7.5	1.3	16	2.4	3.4	4.5	8.1
Sweet cherries	10.0	0.4	.....	0.2	0.6	1.0	2.4
Plums	6.1	0.8	6	1.3	2.0	2.6	4.8

From the stone fruits the stones are to be removed before weighing them and before fermentation takes place. Strawberries, gooseberries, blackberries, and agriot cherries are particularly qualified for strong and fine wines. *machining* the berries and removing the stones the fruits are small enough not to

latter proceeding is, of course, only possible with fruits which require a large quantity of water. During the process of mashing and pressing the fruits great care is necessary to prevent the dissolution of iron in the juice, as even very insignificant particles of it will give a bad taste to the wine and also a bad muddy color.

Iron wine-presses and the lower parts of the spindles are to be painted with iron varnish. In order to avoid the dissolution of iron, the soaking out of the residuum of grapes is to be preferred to the pressing. Sieves made of brass are preferable, but must be kept very clean. The riper the fruits the better the wine will be. Rotten fruits must be removed as much as possible.

The fermentation will be the quicker the nearer the degree of heat is to 30° , but the danger of the formation of acid of vinegar (acetic acid), lactic acid, slime, etc., increases with the heat. If the residuum is not kept in the liquid it often grows very hot by contact with the air, and injurious decompositions are formed. The most favorable degree of heat for fermentation is from 15° to 20° C., 12° to 16° R.

Berries picked in the hot part of the day are warm, and if gathered in large quantity in receptacles they often become very hot. In these warm, partly already injured berries, an alteration can take place which is injurious to the wine produced therefrom. Such fruits which ripen in summer should, for this reason, be picked in the morning or evening or on a cool day. In no case should they remain for any length of time in large filled up receptacles.

If the mash is too warm it ought to be brought to the correct degree as soon as possible by adding cold water.

There are cases where great quantities of grape wine were spoiled only because the grapes, though of very good quality, had been harvested in the heat and had been transported a long distance.

In those years in which the grapes are harvested in very warm weather there are always more poor wines than when the grapes are cool before they are put into the tubs. It has been observed that fermentation does not commence soon if the berries are picked soon after rain.

If the alcoholic fermentation at the correct degree of heat does not sufficiently commence within twenty-four hours there is danger that other dissolutions will take place, mucilage or lactic acid formation, or, in case of slow fermentation, even vinegar formation. The fermentation can be produced by adding compressed artificial dry yeast or fluid corn yeast, 50 grams of the former or about one-fourth liter of the latter to 1 hectoliter are in the first place added to one part of the mixture of sugar-water and juice or mashed fruits. As soon as this is in good fermentation it is mixed with the rest of the mash. As a matter of course only the very best and freshest yeast is to be used. Yeast of beer is of no use.

One of the greatest difficulties in preparing berry wines is caused by a too slow and often incomplete fermentation. This is produced either by the mash having been filled into a barrel, *smoked* with *...*

tion of acid of vinegar at the beginning of the fermentation, or also by the berries not containing sufficient nutritious matter in proportion to the yeast necessary for the fermentation of the sugar.

Fermentation will be greatly accelerated by adding currants or raisins or cristated currants to the mixture of berries or their juice with sugar-water. From 1 to 2 pounds of currants or raisins may be added to 10 liters or 11 kilograms of fruits. They must be quickly washed with cold water, then cut, added to the mixture of juice and sugar-water, and left therein during fermentation. For 1 pound of raisins $1\frac{1}{2}$ liters of water more may be added. The air is to be carefully excluded from the surface of fruits left standing after having been either lyed or washed, and also during and after the process of fermentation, else a part of the alcohol will turn into acetic acid, causing the wine to remain muddy and slimy and to receive a disagreeable taste. Besides this, wine containing much acetic acid does not agree with many persons. Generally, but especially with fleshy or slimy fruits, such as gooseberries, whortleberries, cherries, plums, etc., it is quite to the purpose to submit the mashed fruits, with an addition of a certain quantity of water and sugar, to the process of fermentation, but this requires great precaution, for as soon as the fermentation commences the husks will get on the surface and thus form a loose mass into which the air will penetrate, and in a short time produce acid of vinegar.

For producing berry wines or red wine on a large scale and when the wine ferments on the husks, the mash in a tub may be covered with a perforated tub-bottom and burdened with weights or tightly fastened in order to prevent the husks from rising, and then the whole may be covered.

In preparing berry wine on a small scale, but yet up to 1 or 2 hectoliters, it is best to use vessels of stone-ware for fermentation*.

On the lower part of these vessels there is a sink-bottom, and the mashed fruits contained in it are again covered with a similar one, water is poured in the channel on the upper part of the vessel and the cover laid upon it. The border of the latter must reach into the water and entirely exclude the air.

As soon as the fermentation has commenced the liquid is let off; it is then replaced by sugar-water, poured off again after twelve hours, water is first poured on it and then poured off again after a lapse of time. This is repeated until the required quantity of water is spent.

If correctly executed the husks are so thoroughly washed that it is altogether useless to press them. In the fluid collected in a tub or bottle the corresponding quantity of sugar not used yet is dissolved. Wines of blackberries, strawberries, sweet cherries, and other fruits for which little water is used may be left in these vessels until fermentation is completed. For the

fermentation of fluids, fermentation vessels in glass may be used to advantage. Such air-tight vessels have been tried repeatedly last year, and they proved excellent. Grape and berry wines remained in a warm room in partly-filled vessels without being in any way injuriously affected by the air.

The family (home) beverage and the table wine must, as soon as fermentation ceases, be drawn off the lees and filled in a slightly sulphurated tub. The strong wines and liquor wines may be left on the lees until they are quite clear and then they are likewise to be filled into a slightly sulphurated tub, but they are filled in bottles only when they do not thicken or ferment any more. For the preservation of wines in bottles intended to stand, bottles provided with patent wire locks are to be selected, or else after the tops of the corks are cut off, and when quite dry the heads of the bottles must be dipped into hot paraffine.

Concerning cleanliness and the storing of the wine in barrels, the explanations given in respect to domestic beverage from dried grapes are to be observed.

DOMESTIC BEVERAGE FROM RAISINS.

One hundred kilograms of raisins are placed into a tub and cold water enough is poured over them just to cover them. After the lapse of twenty-four hours the fluid is to be drawn off in a tub. The now sufficiently soaked raisins are then pounded or pressed through a sieve provided with such wide holes that whole berries can not penetrate; water is then poured over them and removed after twenty-four hours. This is to be repeated until 4 or 5 hectoliters of fluid are collected in the tub, just according to the wished-for strength of the domestic beverage. The fluid is then left to ferment. The most favorable degree of heat for this is from 15° to 20° C. (12° to 16° Reaumur); a much higher or lower degree is to be avoided. If fermentation does not begin within twenty-four hours then 100 grams of good, fresh, compressed yeast or one-fourth of a liter of good liquid grain yeast are to be added to the hectoliter. Yeast of beer is not fit for use, but from 1 to 10 liters of yeast from good wine may be added to 1 hectoliter, provided it be very fresh and the wine has not been drawn off from it too late, at least in the beginning of February.

Old, especially slimy, wine yeast is carefully to be avoided, as it would make the beverage slimy and not clear. As soon as fermentation ceases the beverage is to be drawn off from the lees and put in a tub slightly sulphurated, one slice for 10 hectoliters.

If the beverage is desired to be a little astringent, which would render it more refreshing, 100 grams of vinous acid would have to be dissolved in a hectoliter. In the season of currants, to 100 kilograms of raisins about 10.15 kilograms, or to 1 hectoliter of domestic beverage before, at, or after the fermentation, 3.4 kilograms of mashed berries, or 3.4 liters of juice of currants, may be added. In a similar way sour-grape wine or cider, or mashed ripe and green apples (fruit fallen off the trees) or their juice

be used. The greatest cleanliness is to be observed in regard to all the vessels or receptacles into which currant wine or domestic beverage is put. The air is to be kept off carefully from the surface of the water on the raisins and from the fermenting and fermented fluid. The tub is to be covered with a lid; the bung-hole is to be closed by a clean sand-bag as long as fermentation lasts, and then by a well-fitting bung. Store-barrels must be kept full as much as possible, and must be bunged up with bungs of acacia, or oak wood, reaching at least 15 centimeters into the cask. The wrapping of the bungs and corks in rags must be avoided. For barrels on tap (*kühnenheiter*) fungus guards are to be used, or the bung, after each drawing off, must be firmly fastened again. All bungs must be kept free of mold, fungi, or other injurious mushrooms, which, especially after this, are apt to spread over the beverage or wine. For this purpose the bungs are now and then to be dipped into spirits of wine entirely free of bad liquor, or, better yet, into a mixture of one part of acid *calcareo sulphurica* (*saurer schwefelsaurer kalk*), which may be kept ready for use in the cellar in a glass cylinder with glass cork. — KEHL, BADEN, GERMANY, August 16, 1888.

E. JOHNSON,

Consul.

EXPORTS FROM BORDEAUX TO THE UNITED STATES.

The following statement shows the value of declared exports from the consular district of Bordeaux, France, to the United States during the four quarters of the year ending June 30, 1888:

Articles.	Quarter ending —				Total for the year.
	September 30, 1887.	December 31, 1887.	March 31, 1888.	June 30, 1888.	
Argols and tartar.....	\$33,344.32	\$76,247.24	\$44,269.14	\$28,261.89	\$182,122.59
Brandy	14,250.44	15,218.52	21,448.33	16,788.38	67,705.67
Corks.....	8,949.15	4,011.68	21,504.03	16,940.82	51,405.68
Drugs and medicines.....	4,840.23	8,711.72	6,834.82	10,663.15	31,049.92
Fruits and vegetables	142,762.02	137,264.47	41,561.25	54,577.51	376,165.25
Nuts.....	2,416.76	165,835.83	1,389.60	261.51	169,903.70
Oil (olive).....	39,757.90	33,418.74	43,911.92	59,276.56	176,365.12
Paper.....	2,719.73	2,140.74	9,953.04	14,705.84	29,519.35
Prunes.....	98,653.56	332,711.64	35,645.16	9,558.09	476,568.45
Rags.....		6,834.81	12,873.99	11,400.56	31,109.36
Sardines	194,580.53	144,954.98	51,516.98	37,748.99	428,801.48
Skins and hides	11,816.15	435.56	14,773.46	11,549.44	38,574.61
Vinegar.....	330.62	1,550.62	2,897.84	290.63	5,069.71
Wines.....	253,788.16	297,615.71	261,111.93	318,508.24	1,131,024.04
Sundries	284,774.00	289,909.52	153,182.97	193,227.49	921,093.98
Total (in U. S. gold).....	1,092,983.57	1,516,861.78	722,874.46	783,759.10	4,116,478.91
Total for the preceding year...	1,166,671.30	1,625,437.96	871,348.89	733,852.84	4,397,310.99
				49,906.26	

GUATEMALA.

LOCATION.

Lying between the Bay of Honduras on the north and east Atlantic coast, the Pacific Ocean on the west, and bounded on the north by the Republic of Mexico and British Honduras or Balize, and on the south by the Republics of Salvador and Honduras, Guatemala forms the northern of the Central American States, and lies within the parallels of 13 and 18 degrees of north latitude.

CLIMATE.

By virtue of its mountainous configuration this Republic possesses a variety of climates, ranging from the torrid to an approximate frigid, but mainly a temperate and perennial spring-like zone.

On the coasts, or, more particularly, near to them, fevers prevail, owing to the intense heat and marshy soil, with stagnant pools in the midst of almost impenetrable jungles and forests. During the day ocean breezes purify the atmosphere, but at night the land breeze, coming down from the mountains, diffuses the malarial vapors and renders the region around and in proximity to the coasts unhealthy. These fevers, while prostrating and wearying upon the system, are not usually fatal. They partake of the nature of the chills and fever, so called, of our northern climate. The native Indian, or lower class of the mixed race, who are careless as to their habits of life, both in eating and drinking, and in exposure to the night air, are those who most readily succumb to the disease; but the foreigner rarely becomes a victim to the *calientura*.

PORTS AND MEANS OF COMMUNICATION.

San José, Champerico, and Ocos are the ports of Guatemala on its Pacific coast. The Pacific Mail line of steamers, connecting, by way of the Isthmus of Panama, with its own line on the Atlantic Ocean from New York, touch at these ports, carrying mails and passengers, with large amounts of freight, on the route to and from San Francisco and the city of Panama. There is also a line of German steamers which engage in competition with the Pacific Mail in the carrying of freight, but which do not run on any published time schedule, and consequently are not depended upon in the passenger traffic. There are, moreover, a number of so-called "tramps," both of steam and sail, which put in a desultory appearance at these ports. The Pacific Mail is, however, exact and regular in its service, long and well established, and naturally engrosses the bulk of passengers and freight in the

From San José and Champerico there are two lines of railways, one running from the first-named port by ascending grade to the capital of the Republic—the city of Guatemala—a distance of 72 miles by its irregular course; and the other from Champerico to Retalhulen, a distance of 28 miles.

The Republic is conveniently supplied with good mountain roads, in some cases suitable for wheeled vehicles, and in others for the animal trail alone. Between all principal points of thoroughfare, and where the exigencies of trade demand, the cart-roads are good, and kept in excellent condition. Most of the distance across the Republic from east to west, that is to say, from the Atlantic to the Pacific, must be traveled on the saddle, as the roads, following the irregular courses of mountain passage, are simply trails, narrow, and in some cases precipitous.

Livingston, Santo Tomás, and Puerto Barrios are ports of the Atlantic coast of this Republic. To the first named there is a regular line of mail and passenger steamers running from New Orleans, while a variety and number of vessels from the other side of the Atlantic touch there, as well as a line of freight steamers from the city of New York. Coasters are also engaged running up and down, in the fruit trade chiefly, which touch at the ports named, as well as the republics south, and extend their traffic in many cases to South American ports. A project for the construction of a grand railway to span this Republic from east to west has been on two occasions attempted, but as yet failed to be carried out.

The mail facilities and conduct of them in Guatemala are worthy of notice and commendation. In this respect they stand on a par with the greatest nations, affording reliable and safe means of communication with all parts of the world. And this is equally true of the interior telegraph and postal system, which carries messages and the mails promptly and efficiently to all portions of the Republic.

STAGES AND ROUTE SCENERY.

Means for individual transportation other than the railways mentioned are confined to the regular lines of "diligencias," or stages, which ply between the City of Guatemala and Antigua, a five-hours' journey, and Quetzaltenango, the second city of size and importance in the Republic, occupying three days and two nights of rest on the road in the transit. The first named pass only through the Indian pueblo of Mixco, resting on the route at the way-side inn of San Rafael for refreshments on their journey to Antigua. The greater portion of the distance is a steady ascent of the mountain foot range of the volcano Agua until San Rafael is passed, when the road descends gradually until Antigua is reached, with a height 200 feet altitude of nearly 5,000 feet

WATER-POWER.

This is abundantly supplied by the numerous streams and natural falls, which are to be found in almost all parts of the country. Various deep rivers water the departments of the Republic. Among others, the Michatoya, having its source in Lake Amatitlan, forming a grand fall of 300 feet near its rise. At the point of its confluence with the Maria Linda River it becomes navigable, so that the timber exported is floated on its surface to port. Another among the larger rivers is the Guacalate, also the Coyolate, which receives several tributaries in its course, and the Purulate, celebrated for the relief of nervous and rheumatic diseases. These are among the principal streams of the department of Escuintla which covers a space of 1,900 square miles in area.

On the northern side of the Republic, and emptying into the Atlantic Ocean, there are likewise a large number of water courses—the picturesque Dulce, and the Sarstoon, among the chief navigable rivers, and the Montagua, which is about being connected by canal with the coast. Indeed, there seems to be no portion of this Republic, on mountain, vale, or plain, where water-power may not be fully supplied for manufacturing or other desirable purposes. The Zápote, near the City of Guatemala, is utilized for giving dynamo power to light the streets and some of the residences of that city by means of electricity. Flour mills at Antigua and Quezaltenango, and saw-mills near Palin, are also run by water-power, while the machinery employed upon sugar and coffee estates is kept in motion by the same useful agent to supplement the labor of man.

SOIL.

The soil of Guatemala is generally fertile and of great variety in its chemical constituents; much of it is of decomposed lava, besides loamy, alluvial, and vegetable decomposition. It is capable of a high state of cultivation, a large portion of it being at present uncultivated.

PRODUCTS OF SOIL.

The agricultural, mineral, and arboriferous resources are exceedingly varied and numerous. The vegetables and fruits of the northern zone flourish literally by the side of those which belong to the torrid zone. Thus it is not unusual to observe the apple and peach tree bearing its fruit in close proximity to the orange and lemon.

COFFEE AND SUGAR.

These are the great staple products, the former being the chief, and for which both soil and climate seem to be most favorably adapted.

On both of these staples I have furnished the Department with full reports, and shall, therefore, pass them with mere mention. I may, however, remark, in connection with coffee culture, and in general answer to numer-

result. One must be prepared for a capital outlay proportioned to the expected extent of cultivation of the coffee tree in order to purchase land, machinery, and incidental fixtures of the proposed established *finca* or *cafetal*, and patiently wait three years for the maiden crop, which will barely pay expenses, meantime devoting one's self to the laborious operation of nursery planting, holing, transplanting, and pruning; fighting, it may be, the hordes of grasshoppers, which, in places, seem to have an especial predilection for the tender shoots, and which frequently consume them. Once successfully established, however, the gains are very large, and worth all the anxiety and labor employed.

TIMBER.

The timber of Guatemala is abundant. There are forests of mahogany and pine, with a great variety of other woods which are capable of being used for manufacturing purposes. The balsam tree grows wild. There are forests of the India rubber tree, besides the textile plants, such as the maguey (*agave Americana*), the saltwort, the soft rush (*carludovica palmata*), the soft aloe (*furcroya gigantea*), all capable of becoming the bases for remunerative industry.

Resins, gums, and balsams are met with, such as the liquid amber, the copal tree, the turpentine fir, vegetable wax (*myrica cerifera*), vegetable soap-tree (*myristica sebifera*), the sarsaparilla root, quinine bark, vanilla beans, cocoa (the finest, it is said, in the world), the Chiapas pimento tree, the tamarind, and a great many other valuable trees indigenous to this soil, but the names of which I am unprepared to supply.

RUBBER AND MAHOGANY.

With regard to these I shall refer particularly to the northern coast, where they are articles of more extensive shipment. The exports of rubber for the past year were 35,203 pounds, an increase of more than 5,000 pounds over that of the previous year. This useful article has been hitherto badly handled by a bleeding process of the trees which threatens to measurably exhaust them. The attention of the authorities, however, has been called to this maltreatment, and they are taking active steps to prevent its continuance. The rubber tree grows well on good soil, and might be planted with reasonable expectation of a favorable pecuniary return, but as from fifteen to twenty years are required to obtain a profitable result, it does not hold out such inducements for enterprise as the agriculturist demands, unless in connection with banana plantations. When the tree bearing that fruit is exhausted it may come into its place.

In the case of mahogany, this valuable timber exists in large quantities. It is found on the banks of the streams, where

about 30 per cent. reduction on gross measurement) gives preference to the markets of Europe. The prices of merchantable lumber in this market are as follows: Pine at the mills is sold at $4\frac{1}{2}$ cents per foot; cedar, $5\frac{1}{2}$ cents; mahogany, $6\frac{1}{2}$ cents. Oak is sold by the piece, of various dimensions. It is hewn by the Indians with their *machates* and brought to market on their backs. The sizes are usually from 3 to 5 feet in length and 2 to 4 inches in thickness. There is no fixed price, but a piece of oak 4 feet long, 2 inches thick, and 4 or 5 inches wide costs about $62\frac{1}{2}$ cents. The measurements given are Spanish, on the basis of the *vara* (2 feet 9 inches to the yard), and the price in Guatemalan currency, which is about 70 cents on the dollar in United States gold.

SARSAPARILLA.

Pursuing the movements and culture of those products which find shipment from the Atlantic coast, of which the town of Livingston is the port, I desire to mention sarsaparilla.

The exports of this article during the past year were 51,311 pounds. This product was in such demand at one time, and commanded such good prices, that the natives gave up almost every other kind of employment and devoted themselves entirely to its production. During the past two years, however, the price has fallen from 31 to 33 cents per pound to 16 to 18 cents per pound, and the demand has largely fallen off owing, probably, to a glutted market. It grows readily from cuttings of the indigenous vine, and, as the natural supply is giving out on account of careless digging of the root, it is possible that the cultivation of sarsaparilla could be made profitable, even at the present low prices.

BANANAS.

The banana crop is one which just now excites much care and attention on the Atlantic coast. The export of this fruit during 1887 was 117,514 bunches. Favorable decrees on the part of the Government, by which land can be readily purchased at a low price (say 30 to 35 cents per acre), have stimulated this industry, and it is believed that during the coming season the production will be quadrupled. A number of our fellow-citizens have settled in the section referred to, and either bought plantations already producing or are busied planting new ones. Livingston, on account of its ready communication with New Orleans, offers peculiar advantages for the banana trade. The rich alluvial lands lying along the Dulce and Sarstoon rivers and on the shores of Lake Yzabal are well adapted for this species of fruit culture.

The only line of steamers buying fruit at the port of Livingston until a few months ago was that of the Royal Mail Steam-ship Company, managed by Messrs. Macheca Brothers, of New Orleans, but lately Messrs. S. & J. Oteri, of the same place, have sent a steamer, thereby creating a healthy competition which, no doubt, will result favorably to those concerned in the

It is estimated that 250,000 banana plants have been set out during the past season. The profits from a well-managed banana plantation are variously estimated at from \$75 to \$100 per acre each year. Those most familiar with the business inform me that this estimate is not too high.

Bananas will come to perfection in their production in the course of twelve to sixteen months' time. The average cost per acre, up to time of production, is \$25. The cost of transportation to steamer varies with the quantity produced and location of the plantation. The price paid at the port per bunch is 50 cents during seven months, and $37\frac{1}{2}$ cents during five months in the year.

COCOA-NUTS.

Trees are being set out in the midst of the banana plantations, and it is reasonable to anticipate that there will be in a few years' time a large addition to the limited supply of cocoa-nuts which now find their way out of the country.

The cultivation of cocoa-nuts is considered a very profitable business, but more capital is required than is necessary for the outlay in the growing of bananas and other fruits. Cocoa-nuts are produced in from six to eight years, and a plantation eight or nine years old is computed to be worth \$1 for each tree annually, which would be a yearly income of about \$150 per acre. Owing to the long period which one would be obliged to wait for returns from this investment it would be better, doubtless, to cultivate the cocoa-nut tree in connection with bananas, as their sustenance does not require the same properties of soil, and they would begin to yield about the time of the natural exhaustion of the banana tree.

PINE-APPLES.

This luscious fruit grows most prolifically near the coasts, and some distance in the interior of the Republic. The pine-apples of the neighborhood of Escuintla and Retalhulen, as well as on the northern coast, adjacent to Livingston, are especially fine. No land seems too poor for their production. It is claimed that the fruit is too perishable for shipment, but the fact is, as I am reliably informed by a gentleman who has had personal experience in forwarding this fruit to Louisiana and Mississippi, it arises from careless packing. His own experience demonstrated that the fruit he shipped to the points named arrived in excellent condition. Pines, which sell readily in the United States at from 25 to 50 cents each, are reluctantly received aboard of the steamers at Livingston at $62\frac{1}{2}$ cents per dozen. It is that port would not fail

PEACHES, PEARS, AND APPLES.

These are abundantly grown in the higher altitudes of Guatemala. But they lack the quality and flavor of the same fruits of the north. They are remarkably good, however, for preserves.

AQUACATE.

Aquacate (the alligator pear) abounds, and is a popular table accompaniment as a vegetable, both in soup and as a salad.

ORANGES AND LEMONS.

Both the lime and the sweet lemon are indigenous to the soil, and are to be found in every portion of the country where fruit trees grow.

It may be generally stated that beets, pears, string-beans, cabbages, cauliflower, the black bean, and all kinds of garden vegetables are grown and supplied here. Potatoes, however, frequently fail under cultivation, and are often in limited supply as a consequence, commanding extravagant prices. Large quantities are, however, received from time to time, by shipment from California.

RICE.

Rice is a cereal which is cultivated on a limited scale for home consumption, and an article of diet very popularly used. In view of the results attending its cultivation on the Atlantic coast it is a matter of surprise that it has not become a product for exportation. A resident of Livingston produced last year, on the same land, two crops of 900 and 700 pounds, respectively, per acre. Considering the small cost of its cultivation, and machines for cleaning, one could reasonably anticipate an immense profit from rice culture.

CACAO.

Several plantations of this bean have been started in the department of Yzabal, but, although the trees thrive, the production has failed to prove remunerative. This is evidently from lack of knowledge as to the proper method of cultivating the bean. Its quality when grown is said to be superior to that in any other portion of the world.

CORN.

Corn is the cereal upon which the laboring classes mainly depend for their daily food. Crushed in the primitive fashion on a stone, mixed with water into a paste, flattened between the hands, and placed upon the charcoal fire, it forms the *tortilla*, which, with *frijoles* (black beans), constitutes the substantial meal for the Indian and most of the poorer ladino class.

This year the corn crop has suffered both from the grasshopper horde

WHEAT.

Wheat is grown in the neighborhood of the City of Quezaltenango, and in small quantities at a few other points of high altitude. It makes, un-mixed with foreign wheat, a dark colored flour. The production of this cereal is not sufficient for the demand of the market, and a large amount, in the shape of flour, is imported. There is, also, a considerable quantity of wheat imported, which is used to mix with the native product in the manufacture of flour.

BARLEY.

Barley is grown to some extent and used in the manufacture of the beer of the country.

TOBACCO.

There is no good reason why experts should not raise good tobacco in Guatemala. An American citizen with extensive experience in the growth, manufacture, and sale of tobacco showed to me a sample of leaf which he raised near the City of Guatemala, and for which he had been offered \$40 per quintal. The seeds of the country are useless. The best are to be had from Ohio, Pennsylvania, Havana, but above and far beyond all the rest those of Sumatra. Turkish seed also gives a very good result.

Tobacco planting here requires a loamy, sandy soil. The average production of Pennsylvania and Ohio seed is 1,000 pounds to the acre, that of Havana and Sumatra between 400 and 500 pounds, and the Turkish between 200 and 300 pounds to the acre.

In Guatemala the seed is sown about the 24th of June. This, I am informed, is a great mistake, on account of the rainy season being due about that date. It should be sown early in the month of May, six months being required to perfect the leaf.

Tobacco raisers here are, as a rule, ignorant of the proper method of curing. They hang the leaf in the sun, which has the effect of prematurely drying it, and consequently of destroying its quality and virtue; afterwards they wet the leaf and put it into a press, and by so doing it is caused to "sweat" and become rank.

The department of Chiquimula produces the largest quantity of tobacco grown in Guatemala. Zacapa produces about six thousand plants, yielding 1,200 pounds. In Santa Rosa a good quality of tobacco is raised. Antigua also possesses the requisite quality of soil, but apparently lacks those who know how to utilize it in the respect mentioned. The very best quality of tobacco is grown in the immediate neighborhood of the city of Guatemala, because the climate is well adapted to it—the soil does not become too dry, and is free from frost.

~~from this country~~ The importations from Cuba

ported tobacco are 10 cents per pound net weight on scraps, and \$1 per pound gross weight, including boxes, on cigars, cigarettes, snuff, smoking, and chewing tobacco.

The increase in the production of tobacco in Guatemala may be noted by the fact that the figures for the total production during the month of January, 1887, were \$1,511.70, while those for the corresponding month in 1888 were \$4,520.64, thus showing an increase of \$3,008.94, or nearly 200 per cent.

MANUFACTURES.

The manufactories of Guatemala are exceedingly limited compared with the excellent facilities which are at hand for their development, and the need of their employment. As has been stated, water-power is abundant, and a spirit of enterprise, combined with the requisite amount of capital, is all that is lacking to create thriving industry by mechanical means, and to reap the substantial advantages of its activities.

There are but few factories in Guatemala worthy the name. In Quezaltenango and in Antigua there are a few flouring mills and one or two furniture factories of limited size. In the city of Guatemala there are manufactories, on a very small scale, for certain articles of merchandise, but all that is made for use and wear is done by hand, with the help of the now ubiquitous sewing-machine.

There are favorable inducements for the establishment of factories for glass and china-ware, paper, furniture, wagons, agricultural implements, cotton and woolen goods, all of which, and many other articles of general use, are now imported and command the most exorbitant prices for their purchase.

LABOR.

This is performed chiefly by Indians throughout the agricultural districts, and by the mixed race of Spanish and Indian, known as the ladino class, in the cities. Their rates of compensation vary according to the nature of their employment. To those working in the *cafetals* from 25 to 37½ cents per diem is paid. In the cities and towns the rate of wages for household servants is from \$5 to \$10 per month. Ordinary laborers receive from 37½ to 75 cents per diem, and day laborers on the railroads are paid \$1 per diem. American carpenters receive from \$4.50 to \$5 per day; American machinists \$5 to \$6, and painters the same as carpenters. On this basis it may be easily calculated as to the remuneration of service for each branch of trade.

There is a distinct and peculiar class of laborers which corresponds very nearly to our express wagons in the northern cities. They are called *mozos*, and carry all kinds of burdens on their broad backs, assisted by a strap across the forehead, which is fastened by ropes to the load. These useful persons receive amounts from 6 to 12½ cents, according to distance, the weight of the burden apparently not entering into the calculation—neither

MINERAL RESOURCES.

There are evidences, both statistical and to a limited degree of present experimental knowledge, of gold and silver mines in this Republic. Many of these were worked in the olden time, but since abandoned, as it is said, for the want of capital. And yet it would seem to the inexperienced mind in such matters that if the product was valuable it would soon produce its own required capital. They bear names, however, on the record, and I mention them for what they are worth. These are the Sastre, Agua Blanca, Laguna, Rincon, San Antonio, and Contreras, near the capital of Guatemala.

In the department of Huehuetenango there are several unworked gold, silver, iron, lead, and salt mines within its limits, with the exception of the Tojlon lead and San Mateo salt mines, which are being developed.

In the department of Quiché, in the Ilon Mountain, there is a gold mine; in Chinique, one of silver and several quarries of opal, marble, alabaster, and gypsum.

In the department of Yzabal, not far from the river Montagua, there are deposits or placers of gold that have yielded, by the primitive process of washing, quite an amount of the precious metal in flakes and dust; now, however, I am informed that Messrs. Potts & Knight, citizens of the United States, are making some improvements with the view of opening up some of the placers in which they are interested, in order to work them on a larger scale. The Friedman Mining Company, of New York, have sent to their properties a corps of competent miners with the purpose of renewing suspended operations upon Las Quebradas. The value of the gold-dust exported from Livingston last year was \$12,000.

Coal exists also in the department of Yzabal. Various seams have been discovered, with indications that there are extended deposits of it. These coal mines start from San Felipe del Golfo, near the Yzabal lagoon, then pass beneath the Goelfete to the foot of the San Gil, extinct volcano, near Santo Tomás. It is said to be a rich bituminous coal, containing, when distilled, 50 per cent. of volatile matter, one-half of which is heavy carburetted hydrogen or illuminating gas.

TRADE.

The bulk of the trade of Guatemala is done with the European markets. This should not be so, and I regret to say that it is brought about by the carelessness and neglect of our dealers in the States. There are many enterprising American merchants wherever trade flourishes in this Republic, but they complain that they are forced to purchase their stocks of merchandise in Europe, because our own merchants are so careless in packing that a large amount of goods received come to them in a damaged condition. And they also complain that in canned goods it is too frequently the case that ~~badly put up~~ that it is spoiled.

There are certain lines of goods, especially in prints and drillings of American manufacture, which have grown into preference here; the natives will have no other. The same may be said of agricultural implements and certain kinds of cutlery goods. Base imitations, at low prices, from Germany are forced upon this market of a great variety of articles of merchandise. Trade-marks and designations are imitated by ingenious alterations intended to convey a false impression that they are the genuine American article. And these Brummagem wares seem to freely sell, but after a short time and trial it is discovered that their cheapness proves to be false economy, and the experiment of purchase is rarely repeated. A good article from the United States soon commends itself and commands the market, and there is no good reason why our people should not speedily reverse the present order of things and control the bulk of the trade of Guatemala if they will be but more careful in their method of procedure by sending forth the best of its kind, properly packed and secured for the roughest handling in its transportation.—GUATEMALA, *August 21, 1888.*

JAMES R. HOSMER,
Consul-General.

EGYPTIAN TRADE.

The net tonnage of Egyptian trade for 1887 was 644,859, and of this 589,533 tons were British, while only 55,236 tons belonged to other nations. As a rule freights ruled higher in 1887 than for many years previous, and ship-owners are reported to be very well satisfied with the results of the year. Freights on cotton to Liverpool were 12s. 6d. in 1887, while in 1886 and 1885 they were, respectively, 11s. 9d. and 10s. 9d. Grain averaged $4\frac{1}{4}$ per cent. in 1887, against $2\frac{7}{8}$ per cent. in 1886 and $4\frac{1}{16}$ per cent. in 1885.

The quantity of produce shipped abroad in 1887 was comparatively encouraging, as may be seen from the following figures, showing the exports from January 1 to December 31:

Year.	Cotton.	Wheat.	Beans.	Barley.	Cotton seed.
	<i>Bales.</i>	<i>Ardebs.</i>	<i>Ardebs.</i>	<i>Ardebs.</i>	<i>Ardebs.</i>
1887.....	422,052	189,791	657,738	36,536	2,288,416
1886.....	417,100	79,867	610,597	286	2,284,003
1885.....	422,196	165,064	965,355	23,863	2,042,263

The total value of exports was, for 1887, £ E. 11,155,300, against £ E. 10,389,390 in 1886, and £ E. 11,717,918 in 1885.

The total imports for the corresponding years, respectively, were £ E. 8,345,695, £ E. 8,049,470, and £ E. 9,219,530, showing that while there is some increase in bales there is a decrease in purchasing capacity. Public demands necessitate popular economies, the struggle being one to

A broad classification of imports may be presented as follows:

Articles.	1887.	1886.
Textile goods.....	£ E. 2,579,200	£ E. 2,419,000
Groceries, drugs, etc.....	696,000	680,000
Spirits, wines, etc.....	647,673	666,000
Timber, coals, etc.....	869,000	869,000
Metals, machinery	985,000	561,000

Increase in 1887 in machinery and metals is due to the purchase of a lot of new rails and some locomotives and other material for the Egyptian railways, and of machinery and castings for the great irrigation undertaking at the Barrage, and for other irrigation works.

The import of coals for 1887 over 1886 aided in giving more vitality to the carrying trade. The relative quantities of coals imported during three years was as follows:

Year.	Alexan- dria.	Port Said.	Suez.	Total.
	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>
1887.....	387,460	707,867	12,516	1,107,843
1886.....	341,045	603,415	5,697	950,157
1885.....	404,131	685,231	31,436	1,120,798

Examination of figures relating to trade with the Soudan illustrates a condition which has operated most adversely upon the commercial prosperity of Egypt. Enormous profits were made out of the trade to and from the Soudan, and were its channels opened again, which I think entirely possible under changed influences, there would again be marked changes in the aggrandizement of real Egyptian wealth and influence. Not only is a rich contribution to trade cut off by the absence in commerce of products of the Soudan, but consumption of foreign articles is vastly diminished. But the condition is best illustrated by figures. Here are the export values for ten years of the leading products of the Soudan:

Year.	Gum.	Ivory.	Ostrich feathers.
1878.....	£197,100	£28,305	£111,000
1879.....	228,156	7,945	102,705
1880.....	242,142	22,880	105,158
1881.....	259,597	804	67,165
1882.....	142,158	18,949	65,467
1883.....	123,724	132,574	71,810
1884.....	82,000	15,416	20,451

I have heretofore given the imports and exports of specie for 1887. The Government figures, which I gave in a report sent with dispatch No. 229, are: Imports, £ E. 3,066,740; exports, £ E. 1,898,062. In making this report I have had recourse to figures kept in the counting-house of R. J. Moss & Co., owners of one of the greatest lines of steam-ships plying between Egypt and England, and their estimates place specie shipments as follows: Imports £ E. 3,145,374; exports, £ E. 1,946,730.

The Government figures regarding trade were also given in the preceding report, above referred to. They place imports for 1887 at £ E. 8,137,054 and exports at £ E. 10,876,417. Such differences are provoking when one is attempting to give the truth. But the difference is not so very great, and yet first-class statisticians should make them closer.

The course of trade to and from Egypt claims some attention in a report like this. Alexandria is, of course, the first commercial port, and having direct railway and river communication with the interior it will continue to control the bulk of foreign interchange until some other port has similar advantages. Port Said is the great coaling station for all the ships passing between the east and the west, and the steamers which bear coal to Port Said are there unable to find return cargoes. They, therefore, have to seek freight by touching at ports on the return voyage to Spain and to England. They would gladly take return cargoes at Port Said greatly below the rates charged from Alexandria, and the question is often mooted regarding the establishment of convenient channels of transportation from the interior to Port Said. The Egyptian Government owns and controls the railways, and, favoring Alexandria, as long as it has the power and influence, any move in favor of Port Said will not succeed.—CAIRO, EGYPT, *August 15, 1888.*

JOHN CARDWELL,
U. S. Agent and Consul-General.

NOTE.—“£ E.” signifies Egyptian pound. £ E. 1 = \$4.9641. An “ardeb” of wheat is a measure equal to about five-eighths of a quarter of 480 pounds. An ardeb of beans or maize equals about two-thirds of a quarter of 480 pounds. One thousand ardebs of cotton seed equal about 118 tons.

MANUFACTURE OF JEWELRY IN PFORZHEIM.

In Pforzheim, in the Grand Duchy of Baden, in 1887, there were 453 factories manufacturing articles of gold and silver. These employed 7,223 workmen. In 1886 there were only 442 factories, with 6,493 persons employed. This indicates an increase of 11 shops and 730 workmen. Besides the number of factories given above there were 241 other factories, with 1,042 workmen dependent immediately for their existence on the jewelry trade, such as die-sinking, plating, and rolling establishments. Of these, 1886 counted but 238, with 865 persons employed. In the immediate neighborhood, 12 establishments, with 106 employes, were running during the year.

WAGES.

The wages paid were the same as that paid in 1886, viz: Ordinary hands.

average pay for a week of 60 hours was: For men, 18 marks; for women, 10.50 marks; for male apprentices, 5.50 marks; for female apprentices, 4 marks.

The amount paid out as wages in the city and suburbs during 1887 was 4,000,000 marks. The amount of gold and silver used is set down at 3,500 kilograms of gold, at 2,800 marks per kilogram, and 10,000 kilograms of silver, at 133 marks per kilogram.

The business of the year was good, although every effort had to be made to keep up foreign trade against a sharp and pushing competition.

The wages paid here are marks, where our help of the same kind get dollars. I never saw a polisher work for less than \$12 a week, and I have known them to get \$18 and \$20. Girls do the dirty work here and get 9 marks, or \$2.10. A mark is 23.8 cents.

The polishing machines are much better than ours, not one-tenth so dirty nor so injurious to the health. The crocus dust is not allowed to escape into the air and then be drawn into the workman's lungs.—MANNHEIM, *August 18, 1888.*

J. C. MONAGHAN,
Consul.

THE PRODUCTION OF SALT IN BADEN.

A century since salt to the German poor was a luxury. At that time a pound of salt cost as much as a pound of meat or a large loaf of bread. The high price was due to the fact that the entire supply of salt for man and beast had to be imported. There were in Baden, at Bruchsal and Mosbach, previous to 1823, only two salt works in operation, producing 600,000 kilograms of cooking salt—a supply far below either demand or consumption. The exclusive right to sell salt was given or sold during periods of from four to six years. Parties getting this right were obliged, besides paying a rent to the State, to guarantee that the salt would be taken from French and Hessian salt works. At first, the Bruchsal salt-producer himself could sell in the villages of the Bishopric of Spire. Later, at the weekly markets, persons known as salt-sellers were tolerated to draw salt from the principal magazines and sell it by the pound “upon clean scales and fittingly dry.” The high price of salt led to a great deal of smuggling and deception, especially along border territory, so much so that certain districts were put on allowances. In 1824 the right to sell was no longer rented; the Government in this year, by a decree, reserved for itself the exclusive right “to salt” the grand duchy. The “salting” (*besalzung*) of the grand duchy by the Government became
The “salting” of salt works at Pappenau and Dürnheim. Borings of Hei-

dom of making borings for salt. His efforts were attended with complete success.* His first efforts in Baden were at Friedrichshall, near Jagstfeld, near the confines of Würtemberg. These proving successful, the Government commissioned him to make borings in the other end of the grand duchy, or Baden Oberland or Upperland. Here he was again successful.

While the cooking salt of Wieliczka and Boehina, in Galicia, is found in huge layers and is dug out in great blocks like stone, that of Baden is taken out dissolved in water, which, coming from the mountains, carries with it large quantities of salt. Each mine has six borings or wells. The pumps were once worked by wind-mills; now by steam and water power. The water is raised through brass pumps into large receiving-pans, wherein it is allowed to evaporate, leaving behind it a salt deposit, which is afterwards gathered and prepared for the market.

Not until the year 1868 did the State withdraw from the exclusive monopoly of the salt trade. Since that date freedom of sale of salt has been allowed. Each centner of home or foreign product of cooking salt must pay a duty of 6 marks per 100 pounds. Salts for cattle and uses in trade are free. In order, however, to prevent cattle salt being sold or used as cooking salt, it is denaturalized, *i. e.*, mixed with a stuff that renders it unfit for food, but not injurious to animals. Since free trade in salt became a reality, the Baden wells have not only maintained the field against all competitors but have now territory abroad. The two works employ two hundred and fifty hands at wages from 12 cents to 85 cents per day. They produce annually 400,000 centners of cooking and 200,000 centners of cattle salt. Of this amount 450,000 centners are used in Baden, the rest is exported. The income to the State from the salt tax is over 500,000 marks, or nearly \$125,000.—MANNHEIM, *August 14, 1888.*

J. C. MONAGHAN,
Consul.

OPENING OF RAILWAY BETWEEN ROME AND SOLMONA.

An important branch line of railway, from Rome to Solmona, has just been opened to traffic. The new line runs easterly from Rome, chiefly through a mountainous country, across the provinces of Rome and Aquila, for a distance of $73\frac{3}{4}$ miles, to Solmona, a city of 18,000 inhabitants. At Solmona it connects with the line leading to Aquila, chief city of the Abruzzi district. At Solmona the new line also joins the Adriatic Coast Railway, thus opening railway communication between Rome and the Adriatic, in a direct line across the Kingdom, without the long and tedious détour to the north or to the south as heretofore.

*His name is forever linked with Baden's salt works and those of Würtemberg. He also published over fifty works on the subject of salt, its production and uses, and on mechanics, instruction in constructing and using machines: also, essays on the building of streets, bridges, and...

The new line has been built by the Government, with the aid of interested provinces and communes. It is Government property, but is worked by the Italian Adriatic Railway Company, to whom it is leased for a term of years. Total length of line from Rome to Solmona, $73\frac{3}{4}$ miles; total cost of construction, including bridges and tunnels, about \$13,000,000.

The opening of this railway is considered an event of great importance in Italy, both from a commercial and strategical point of view. The products of the country traversed by the new line are chiefly agricultural, such as wine and olive-oil. There are some local manufactures, but they are so few and unimportant that special mention need not be made of them in this report. —
ROME, August 25, 1888.

CHARLES M. WOOD,
Vice-Consul-General.

EXPORTATION OF HORSES FROM GHENT.

Attention is called to this subject in the report recently prepared by the commission on agriculture for the Province of Eastern Flanders. It is therein a matter of complaint that the annual fairs held during the last year (1887) have revealed but a scant supply of really desirable horses. To this verdict there is one exception, in favor of the town of Grammont, remarkable for the success of its stock, and whence, I may incidentally say, the exportation just mentioned took place.

Even at the present day, after repeated admixtures of Barb and other blood, the Flanders horse remains heavy and coarse-legged, but always powerful and enduring. Thus it is that Flemish cart-horse stallions (*reproducteurs de gros trait*) are in great demand, and it is calculated that since 1882 their exportation has more than doubled. Not only the United States, but also Brazil and the Argentine Republic, are heavy buyers of the more valuable breeders, while Germany and Austria secure large numbers in Europe.

It is feared by many intelligent Belgians that a continued exportation in this direction will, perhaps before long, cause a depreciated product, such as was witnessed in the case of the so-called Norfolk breed, the deterioration of which followed close upon the too-frequent purchases of America. It is not then to be wondered at if the commission on agriculture has come to the conclusion that uniform regulations applicable to the nine provinces should at once be elaborated, with a view to keeping the most valuable breeders at home. Just how this is to be accomplished the commission does not explain, since it rests on the one suggestion, that sufficiently large bounties be offered to individual owners. It may well be doubted if such a course could at all fairly produce the desired result—GHENT, August 22, 1888.

W. S. BUTTERFIELD,

AMERICAN AGRICULTURAL IMPLEMENTS IN CANADA.

I find that plows of American manufacture are among the most prominent of the imports in this line. The Oliver chilled plow (made at South Bend, Ind., and the one, I am told, that has the largest sale in the United States), the Syracuse plow, and the South Bend plow seem to be most in demand and to have the largest sale. I have before me on my desk an offer from an Ontario dealer in the Oliver plows to sell same f. o. b. at his city in Canada for \$10 each in quantities. The retail price here is \$12, and numerous transactions take place at that figure. The same plows, I understand, are sold in quantities at the factory (not for export) at \$14 each, and cost the American farmer at retail \$16.

The Syracuse plow retails at \$11 or \$12 here, and, I am informed, sells for from \$14 to \$16 in the United States at retail, and the South Bend at \$11 here, and \$14 at home.

It is pleasing to observe how cheaply our manufacturers must be able to turn out these goods, from the fact that the Canadian duty on this class of goods is 35 per cent. ad valorem. Even admitting that the manufacturer makes no profit on his sales in Canada, these figures are of interest:

Price at which plow is sold in Canada.....	\$10.00
Duty at 35 per cent. ad valorem and freight.....	\$3.50
Profit to Canadian dealer, probably.....	1.50
	5.00
Leaving actual cost to manufacture plow.....	5.00
Retailed to American farmer at.....	16.00
Profit to manufacturer on all home sales, per plow.....	11.00

It would thus seem that the Canadian farmer has an advantage over his American neighbor in the purchase of necessary implements produced in his own country, and the latter before purchasing his plows might well figure as follows:

Price of plow at retail in United States.....	\$16.00
Price of same in Canada	\$12.00
Freight to return same to United States (duty is free on American goods re- turned).....	1.00
	13.00
Profit to American farmer by purchasing American-made plow in Canada.....	3.00

Plows with tempered-steel mold-bands and beams, which sell in the United States for \$17 and upwards, are manufactured in Canada (from Pittsburgh steel, on which duty has to be paid, and the wages of the workmen are substantially the same as in the United States), and are sold for \$14 retail, thus showing

over Canadian manufacturer of \$3 on each plow. When it is considered that the Canadian manufacturer has to pay a duty on his materials and freight upon same to Canada from Pittsburgh, it will be readily seen at a glance that the excess of profits to the American over the Canadian manufacturer is much greater than the sum named, \$3.

I am credibly advised by a very prominent Canadian farmer that he has just bought an American self-binding reaper (Walter A. Woods) for \$110, laid down in an American city, near the lines, while the price of same machine in the same place to an American farmer would be from \$150 to \$170.

In addition to the larger implements mentioned, farmers' or agricultural hardware imported from the United States consists of light shelf goods, dry paints, and agricultural hand-tools, such as spades, shovels, forks, etc., on which articles the duty varies from 35 to 70 per cent., although the printed tariff reads only from 30 to 35 per cent. This Government has, however, instructed its customs officers to advance prices on invoices in certain lines which brings the duty up to a very high rate. On scythes, for instance, by means of a specific and ad valorem duty they have to pay from 60 to 70 per cent.

Notwithstanding these tremendous charges a careful comparison of the wholesale and retail prices of the above tools shows that in all cases American goods of this character can be bought in Canada as cheap, and, in many cases, cheaper than in the United States. It is conclusively proven by these facts that the American farmers are not receiving the full benefit of the low prices at which these goods can be produced in the United States.

These benefits are, apparently, reserved for the Canadians and other foreigners to whose markets we export goods. But existing conditions enable the American manufacturer to compel the purchase of his goods by the American farmer at exorbitant profits.

So great has been this discrimination by American manufacturers in favor of foreign purchasers that the Canadian customs authorities have come to regard with suspicion the prices on nearly all American invoices, as they can not understand why these goods should be sold to Canadians at such great reductions from the prices at which they are sold at home, at the point of manufacture. As a consequence they have during the past two years largely adopted the plan of appraising these goods for duty at the home figures in preference to the prices stated in the invoices. For instance, an American manufacturer may be willing to sell a certain article for \$5 to the Canadian trade, the price for the same article at home being \$8; the valuation is placed at the latter figure, and even though we sell for the former, the purchaser has to pay duty on \$3 more than the goods cost him.

It is that we are losing our export trade to this

The short-sightedness of our manufacturers in this respect, no less than the development of manufacturing in Canada, is closing this as it does other outside markets to our goods, and is driving us back to trade only within ourselves, to the injury of our great agricultural interests, to the reduction of the wages of our workingmen, and to the lessening of the products of our factories. —LONDON, ONTARIO, *September 15, 1888.*

WM. DE H. WASHINGTON,
Commercial Agent.

MESSAGE OF PRESIDENT DIAZ TO MEXICAN CONGRESS.

Messrs. Deputies: Messrs. Senators:

I feel high satisfaction upon meeting here the representatives of the people, now that the period of four years for which the public sense, expressed in the elections, placed me in charge of the executive is about to terminate.

Happily, throughout all the Mexican territory tranquility and good order reign, nor have they once been interrupted during the past four years; and, in consequence of the confidence which the situation inspires, all elements of prosperity at the command of the Republic are being developed.

Our foreign relations still sustain the characteristics of friendship and harmony which have marked them during recent times.

In view of the complications arising from the passage over the boundary line of cattle seeking pasture on either side, instructions were furnished to our minister at Washington to negotiate a treaty convention which should obviate the troubles incident to the stock raisers. The said convention was signed on July 11 last, and will now be submitted to the Senate for approval.

The officers who crossed over into American territory for the purpose of arresting a deserter, after due trial by the military court at Piedras Negras, have been sentenced to a requisite penalty.

The Congress of the United States has again taken up for consideration the matter of the fraudulent claims of Weil and La Abra. As the United States Senate some time since rejected the treaty concluded for the revision of those like claims, it is to be hoped that the houses of the American Congress will devise some means for preventing the final triumph of the fraud committed by the claimants.

During the close of last July the same Congress approved a bill authorizing the expenditure of \$100,000 by an American commission, which, in connection with ours, should relocate the boundary line and replace the injured boundary monuments; but, considering the said sum insufficient, the Chief Executive of that nation has requested authorization for the expenditure of \$200,000, which as yet is not known to be conceded.

The death sentence pronounced against Arvizu and Gutierrez, the promoters of the Nogales disorders, was commuted to twenty years' confinement. It was in their behalf that the President of the United States interposed his good offices, soliciting amelioration of their penalty.

Some Indians having escaped from the San Carlos Reservation, it is feared that they will commit depredations in our frontier states of Chihuahua and Sonora, and adequate measures are to be taken for the protection of those said states.

The governor of Arizona (in the United States) having had occasion to deliver over two American criminals, by way of extradition, to the governor of Sonora, the latter in turn delivered two Mexican criminals over to the former. The possible increase of leading crimes which have sprung up along the frontier at points where the two countries meet

haps save himself, and also occurrences like the one I have mentioned, constrain me to recommend anew to the Senate the suggestion made in my message of September, 1887, that it revise the extradition treaty with the United States, in accord with amendments approved long since by the American Senate, empowering, in a special manner and in extraordinary cases, the Presidents of each Republic to effect the extradition of their own co-citizens.

The Senate gave its approval to the treaty convention made with a special envoy from Guatemala for the adjustment, on an impartial basis, of the mutual claims of both countries; but it is now ascertained that the legislative assembly of said nation, upon revising the terms of the convention, has introduced substantial modifications, which it would be impossible to accept, especially if the prominent antecedents of that convention are taken into consideration, as well as the other international matters with which it stands related.

A treaty of commercial reciprocity with that country had also been framed, and had been submitted to the Senate; but, upon the request of the Guatemalan Government, it was agreed to waive for the present its ratification, in order to agree upon some method for making the treaty satisfactory to both nations.

Difficulties have arisen between the boundary commissions of Guatemala, in the survey of the boundary line, and the Department of Petén. These gave occasion to a note from the minister of foreign affairs of that Republic to our legation protesting against the operations of the Mexican engineers. Our department of foreign affairs is engaged in the study of the report thereon furnished by the department of public works, with the attention due thereto, in order to dictate whatever measure may be adjudged needful and just.

On the 10th of last July our minister at Washington signed with the representative of Ecuador, recently elected President of that sister Republic, a treaty of friendship, commerce, and navigation. The treaty I refer to will soon be submitted to the Senate for its approval.

Our consul-general at Paris, the engineer, Don Francisco Diaz Covarrubias, is to be present as Mexican delegate at the international geodetic assembly, to meet soon at Salzburg, and to which our Government was officially invited.

The executive has approved of the project of agreement and rules signed by our representative at the international conference in Brussels, which, as I have already informed Congress, was convened for the purpose of translating and publishing all customs codes and tariffs extant.

The Mexican Government has been invited in expressive terms by the Government of Spain to take immediate participation in the preparations commenced in that Kingdom for the celebration, in 1892, of the fourth centennial of the discovery of America. The friendly invitation having been accepted, our minister residing in Madrid has been appointed special representative on that occasion.

A treaty for the exchange of mail packages reciprocally, similar to the one recently negotiated and now in force with the United States, is about to be concluded with the minister of Her Britannic Majesty by the commissioner of the department of foreign affairs.

* * * * *

The elections to fill the Federal appointments were conducted in the shadow of peace and quiet throughout the country. No question of politics nor of local character has, during the recess of the chambers, disturbed public order, and the harmony which subsists between the governments of the federation and of the states. This favorable condition of affairs has enabled all to devote attention to public improvements, to administrative matters, to the progress of education, and to impart to public safety that increasing stability which should and operate in the elevation of the reputation of the Mexican nation. This
 of the several states, assisted by

stationed at convenient points; all of which tends to the prevention of crime and inspires confidence among the various companies and laboring classes. The organization of the rural corps and the rules set by some of their fixed garrisons are being bettered each day, and new improvements are now under consideration, due notice whereof will be given to Congress.

The condition of the district mounted guards has also been improved. Their personnel has been increased, and also the amounts designed to the payment of the same under the budget of expenditures. The nature of the service rendered by the mounted guards, who are obliged, even though living within the limits of the Federal district, to change their residence constantly, made it very difficult for them to attend to the education of their children. This difficulty has been set aside by the recent opening of a special school, in which the children of those guards receive not only instruction but clothing and food as well.

The inhabitants of the country are as much interested in the sanitary condition thereof as in its security. In this line the efforts of the local authorities are seconded by the Federal Executive, in the bettering of the sanitary conditions of all the territory of the Union to obviate thus an attack by epidemics. Fortunately, the diminishing of Asiatic cholera, alike in Italy and in Chili, during the past year, presages its disappearance soon from Europe and America. Fortunately, also, a long time has elapsed since any alarming epidemic has appeared in the Republic.

In the Federal district, where matters of public sanitation are more directly at the charge of the Executive of the Union, improvement is being constantly made on the prosecution of the drainage works, so important, and the prompt dispatch of which will be secured through a contract just made for the speedy termination of part of the labors. To these labors are added other partial works undertaken by the board of health and the city councils under the auspices and inspection of the political authorities and of the department therewith encharged.

* * * * *

The postal service is improving as much as possible. Nothing can give a better idea of its progress than the following data touching its operations: The proceeds of the service during the fiscal year closing June 30 last, were in excess of the previous year \$53,756; and the pleasing result was obtained, viz, that the income during that period, as was hoped, not only equaled that of 1883, the last year when the high postal tariff was in force, but even exceeded by \$36,414 the net income of that year.

Naturally the cause for the increase in the proceeds was found in the increase of postal matter handled. While 24,000,000 pieces were handled in the fiscal year 1886-'87, the movement during the year closing in June last exceeded 29,000,000 pieces.

The item of foreign correspondence alone has assumed such increased proportions that it has become necessary to open new departments in order to reinforce the number of employes in various exchange offices in the Federal district, as well as on the northern frontier. Evidently the great reduction of time in communication with the United States and Europe, which is to be soon furnished us by the National Railroad, will make this progress even more palpable.

Throughout the whole country greater activity is observable in matters of communication. Places that were scarcely known by name, to-day enjoy mail facilities which place them in possession of culture by means of the transmission of books and papers, co-operating, as they do, likewise to the development of social intercourse and to the interchange of business transactions. To obtain this result it was necessary to open new offices, which included thirty local post-offices and fifty-eight agencies. To utilize the same new postal routes had to be opened up and the number of weekly trips increased.

The late treaty made with the United States for the exchange of parcels through the mails took effect on the 1st of August last. Notwithstanding the short time that this important service has been in operation, the number of parcels exchanged has been very large, and it is to be hoped that the packages sent from Mexico will steadily increase in number.

For the continuation of the service carried on between San Francisco, Cal., and some Pacific ports of Mexico by the steamer *Newbern*, and in order to connect the said service with that rendered by the steamer *Alexander*, a contract has been entered into with the concessionaire of this latter line for the establishment of a steamer service, which, under the Mexican flag, shall ply between the principal ports of the two lines mentioned.

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The national *monte de piedad* (pawn-office) has struggled with the difficulties consequent upon the crisis through which it passed four years since, and now can, due to the efforts made in its behalf, continue its operations and strengthen its credit. The Executive insists upon the new combinations suggested in his preceding message, and hopes to see the same soon realized, certain that they will greatly aid in the usefulness of the establishment.

In accordance with the authorization given by Congress for the total or partial modification of the code of commerce, the Executive hastened to issue the law on anonymous firms for the purpose of thus fomenting the creation of like institutions which have such decided influence upon the development of the industrial and mercantile interests of the country. The commission appointed to study the general plan of amendments to the said code is concluding its interesting labors and will soon issue the new code of commerce.

* * * * *

No effort has been spared tending to foster and propagate public education as the most efficient method of assuring in future the practice of democratic institutions and peace and prosperity throughout the Republic. In this connection various measures have been inaugurated by the department of justice and public instruction for the opening of primary schools in the northern district of Lower California, which, because of its geographical position, and on account of its natural elements, claims the especial attention of the Government. Some notable improvements have been introduced in the normal school of teachers suggested by the late trip made to the United States by the director. The demands of modern scholarship have been gradually met in the other national schools, and, in order to stimulate private enterprise in the interest of education, due assistance has been tendered to a night school for working girls.

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The progress made in the principal departments dependent upon the department of public works since my last message has been indeed noteworthy. With regard to railroads, despite the fact that rains have been copious in the greater part of the country, it can be stated that works of survey and construction have been begun on some lines, while on others such work has continued with little or no interruption.

On the 21st of last May the Central Railroad Company opened up to traffic the important line from Irapuato to Guadalajara, 259 kilometers in length. On the Tampico-San Luis branch the iron has reached kilometer No. 188, on the bank of the Gallinas River, over which it is proposed to throw a bridge for the tracks. The road-bed of the same has been prepared as far as kilometer 232. On the line from Aguascalientes to San Luis Potosi, the locomotive, on the 9th instant, arrived at Salinas del Peñon, some 110 kilometers from Aguascalientes, and about half the distance from San Luis Potosi.

The Mexican National Company has worked with great activity to complete the branch from Saltillo to San Miguel de Allende, in length 565 kilometers. At the close of this month the northern line reached the city of San Luis, while the road is to be connected soon at the ~~road~~ ^{road} for it is to be opened for traffic in November. The conclusion of this ~~road~~ ^{road} of steel to link the City of

Regarding the Interoceanic Railroad Company, formed by the fusion of various companies, it can be said that 20 kilometers have been terminated on the road from Yautepec to Amacusac and 30 more on the section between Mazapa and San Martin Texmelucan. It is to be presumed that by the aid of the financial combinations recently effected in London this railroad will give great impulse to their labors.

The companies in Yucatan are likewise engaged in construction. The Mérida-Calkini branch has delivered 6 kilometers and the Mérida-Valladolid 7.

The total extent of railroads in the Republic reaches now 7,500 kilometers.

The telegraph system has been gradually enlarged by the construction of new lines, which have connected important towns of various states and various frontier points, while the system of general ways of communication has always been followed. Without stopping to particularize the details of progress as obtaining along those lines, and many of which details have been perfected, it is sufficient to state that the total extent of wires strung since last April up to date reaches 950 kilometers. Aside from construction work on the aforesaid lines, repairs and improvements have been made on the 18,000 kilometers which comprise the Federal telegraph system. The good condition of the system is well known, for communication by wire has been constantly maintained in the country despite the accidents caused by the abundant rains of last June, during which time, and even while the most severe damage befel the Bajío district, the Federal telegraph system alone remained unhurt, and rendered, during those times of calamity, marked services to the authorities and to the public.

Work on the Vera Cruz harbor has kept up incessantly. The construction company having received the blocks of *chalán parta* has sunk a great number of them along the entire length of the northeast breakwater. It is to be believed that by the activity displayed in the work and the experience therein attained that each day better results will be obtained in the work and more progress made, so that very shortly, and within the contract term, the work will be concluded.

The towns of Matamoros and Paso del Norte were seriously threatened by the waters of the Rio Bravo, which, year by year, destroyed the banks on which they are located. In order to remedy the evil the Government undertook, in their immediate vicinity, some works of defense. While the works are not concluded, they are beginning to give the best of results. At Matamoros five wing-dams of a total length of 646 meters have been constructed. The works defend the northeastern part of the city, as well as some 800 meters of the river bank, a portion of land which lay within the threatened tract, being almost below the level of the high water. Four wing-dams have been finished at Paso del Norte, and the fifth is well under way.

Mining matters are being fully developed. While from April to date there have been only four hundred and twenty-five denouncements of mines and eight denouncements of reduction works, a lower record than hitherto, it should be noted that during the same period six hundred and eighty-two mines and thirty-three reduction works have been brought into operation. On the other hand, the good effects which the law of June 6 last are producing may have operated to diminish the denouncement of mines, while they increased the number of contracts made with the Executive for the development of the mineral zones in accordance with the law cited; during this time fifty-seven contracts were made and others are pending. Including the contracts already concluded since the promulgation of the said law, it is assured that capital, at least to the extent of \$30,000,000, has been invested in mining industries. The recent development of that industry has resulted in the creation of new mining deputations. Seven such deputations have been established lately at points where the necessity for same is plainly evident.

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The general bureau of statistics, formed under the law of May 26, 1882, has collected up

among the publications of the department. Prominent among these statistics are those on the criminal classes, embracing a period from 1871 to 1885, which gives satisfactory indications of the decrease, noteworthy and gradual, of crime in this our country.

The work of reorganization in the public treasury is continued; but, like every administrative reform of importance, it requires the lapse of time to reach a satisfactory conclusion. Yet it can be said that while the financial situation is not altogether prosperous, there are good grounds for belief that it will improve, for now the Republic shows in extraordinary degree a development of the elements of public wealth.

Owing to the increase in national revenue the treasury has been enabled to comply easily with the obligations provided for in the estimates of expenditures. This is due to increase in value of property, to the development of commerce, and to the increased exportation of Mexican products, as well as to the favorable condition of our credit, which was never quoted higher than the present time.

Construction on the new custom-house at Santiago Tlaltelolco being terminated, the dispatching of freight coming to this capital on the railroads has been concentrated there, to the benefit of commerce and of the fiscal interests, and it became necessary to reorganize the service of the custom-house in order to meet the new exigencies thereof.

The stamp revenue had been hitherto collected through the payment of commissions of so much per cent. on the amounts collected; but as the executive was desirous of introducing greater economy in the collection, he decreed a new tariff of rates of commission, which has taken effect in this present fiscal year. Experience will demonstrate whether the commissions allotted are fair recompense for the labor and responsibilities of the functionaries of this service and adequate to the public service.

Business circles and the poorer classes alike met with serious difficulties in the simultaneous circulation of coins of the decimal and the old systems. The Government could not remain indifferent to these evils, and it therefore made a contract with the Mexican National Bank for the redemption of the old coinage to be all called in, in order that the coinage current should be issued according to the decimal system, and that within the term fixed by Congress in its law of June 4 last, the legal circulation of money of the old coin should cease. This contract is being complied with throughout all the Republic.

In virtue of the law of the 30th of last June, two of the banks provided for by legislation in Chihuahua were established, a contract to that effect having been made with the respective companies. The arrangement made limited the issue and circulation of bank-notes, while the interests of the public are guaranteed by the opening of a reserve fund and by the appointment of a functionary who, in the name of the Government, may inspect the operations of those banks. Thus they were brought into subjection to our banking laws.

The department has made a contract whereby the Mortgage Bank will widen the sphere of its action, increasing its capital stock in order to devote itself to new operations designed to develop wealth. Institutions of credit being one of the most efficient methods of attaining such favorable results, the Government will engage to aid this movement, provided there is no conflict with the laws or with arrangements effected with other companies.

The operations of the liquidation and conversion of the interior debt continue to develop regularly. With reference to the foreign debt, the Government is complying with the contract of the loan made in Berlin on March 24 last, whereby the old London debt is being converted at 40 per cent. into the new consolidated 6 per cents. The loaning firm has taken advantage of the right of option which it had reserved for £2,100,000 sterling. This sum, added to the cash payment made, shows that the loan is realized in almost two-thirds of its value. There are good grounds for believing that very shortly the contract will be wholly

of the current year.

there was an approximate increase in other articles, all of which, taking into account the depreciation of silver, is advantageous to the country, which has paid with merchandise a greater proportion of its imports than during the preceding year.

The revenue is increasing. During the last fiscal year, closing June 30, the cash collections aggregated \$32,508,564. It has been practicable, therefore, to meet punctually the several branches of public service, as well as to pay off the cost of public improvements and other pecuniary obligations resting upon the treasury.

The floating debt, with interest, has been redeemed, the treasury liquidating and settling the respective accounts. Also the pending accounts with the national bank have been settled up to June 30 last, while a new contract for the account current, to be opened in conformity with the charter franchise, has been made with the said institution.

* * * * *

The status of the public consolidated debt up to June 30 was as follows:

Bonds issued of the interior debt	\$16,052,000
Bonds issued of the foreign debt	22,252,250

In virtue of the loan of the bonds of the issues of 1851 and 1886, £4,462,500 sterling have been converted at 40 per cent. When realized the foreign debt will drop to the figure, in gold, of \$52,500,000.

Meanwhile payment is being strictly made of the interest, alike on the bonds of the interior debt and the foreign debt, as well as upon the loan bonds. The amount to meet the coupon on the latter, falling due in October, is already placed in London through the National Bank.

The bonds of the interior debt are quoted in Mexico at 33 per cent., and certificates (held by employes for arrearages of salary) without interest at 35 per cent.

The old bonds of 1851, which have not as yet been converted, are quoted in London at 38 per cent., while those of the new loan negotiated at Berlin are at 92½ per cent., thus evidencing that our credit has reached a point never touched since the days of independence.

* * * * *

September 16, 1888.

TURKEY'S LAW ON EXCAVATIONS.

[Transmitted by Minister Straus.]

CHAPTER I.

ARTICLE 1. The remains left by the ancient populations of the states forming at present the dominions of the Ottoman Empire, that is to say, the gold and silver and other ancient coins, and the inscriptions conveying reference to history, and statues, and sepulchers, and ornamental objects in clay, stone, and other materials, utensils, arms, tools, statuettes, ring-stones, temples, palaces, circuses, theaters, fortifications, bridges, aqueducts, bodies and objects in tombs, burying mounds, mausoleums, and columns, are regarded as antiquities.

ART. 2. In general the right of ownership of all the antiquities is regulated by the present law.

ART. 3. All the antiquities discovered in the Ottoman territory, be it on the surface, underground, or exhumed, picked up in the sea, the lakes, the rivers, the streams, or the valleys, are the property of the Government.

ART. 4. The monuments of antiquity which happen to be in the property or houses of private persons, either loose or built in the walls, can not be moved by the proprietors of the property, and for the keeping of those antiquities in their original place the Government has inaugurated the following measures.

ART. 5. It is forbidden to destroy the antiquities which may be discovered in one's land, like buildings, roads, walls of castles, and fortifications.

kiln at a distance less than half a kilometer from the spot where the antiquities are to be found; or from the erection of any kind of building and works which would be injurious; or to remove the stones of tumbled down ancient monuments; from measuring or taking molds; or of placing ladders on them for any purpose whatever; from appropriating or restoring old buildings and making use of them in part or in all; or to use them for deposits of grain, straw, or hay, or to use them as tanks, or for cattle, or turn them into fountains, or to use them for other purposes.

ART. 6. The places on which the Government has decided to make excavations may be bought from their owners, if they are in the hands of private persons or societies; if they refuse to sell, the regulation on expropriation for public uses shall be applied in order to buy that property.

ART. 7. No one is allowed to make excavations, to extract or appropriate antiquities in the Ottoman dominions, without having previously obtained the official permit in accordance with the present regulation.

ART. 8. The exportation of antiquities found within Ottoman territory is absolutely forbidden.

ART. 9. The permit for the excavation and exhumation of antiquities may be granted to private persons or to any scientific society. The terms of that permit must be in accordance with the conditions of the present regulation.

ART. 10. As to the searches and excavations of antiquities, after the opinion of the administration of the Imperial Museum and the conclusions of the council of public instruction have submitted the case to the Sublime Porte, the final permit will be granted in accordance with the terms contained in the third chapter of the present regulation.

ART. 11. A duplicate list describing the quantity and the quality of the objects excavated must be made on the printed blanks to be furnished by the ministry of public instruction, which must be signed and certified, then one of the copies will remain with the excavator and the other with the board of public instruction; where such boards do not exist, they will be recorded in the books kept for the purpose by the local authorities and sent to the ministry of public instruction.

ART. 12. The antiquities excavated with an official permit belong to the Imperial Museum, and the excavators have only the right to take drawings or molds.

ART. 13. The antiquities discovered without permit are confiscated, and if the excavator has already disposed of them he will pay their value.

ART. 14. The antiquities which may be discovered by accident in digging the foundations of a building, or of a wall, or of a sewer shall be divided in equal parts between the owner of the property and the Government, and then at the division of those antiquities, as the Government has the choice of taking such as it thinks proper on paying their value, it may get from the land owner out of those which have fallen to his share such a portion as it wants.

CHAPTER II.

ART. 15. Those who desire to undertake excavations of antiquities shall prepare a topographical plan showing the boundaries of the spot to be excavated and present it at Constantinople to the ministry of public instruction, and if they are in the provinces, to the governors-general with their written request, and the governors-general will forward it, together with their report of their investigation of the subject, to the ministry of public instruction.

ART. 16. The delivery of the permit of excavation appertains to the ministry of public instruction after agreement with the direction of the Imperial Museum, but unless the necessary investigations are made, and, according to Article 10, the consent of the Sublime Porte

(2) If the excavations are to take place in the landed property of a private person to satisfy the owner.

(3) The pecuniary security, which will be agreed upon by the director of the Imperial Museum, must be actually deposited.

After the fulfillment of these conditions the ministry of public instruction, after having conformed to the prescriptions of the preceding article, delivers the permit. But no permit can be granted for more than two years. And if, before beginning the excavations, or even after having begun them, for some reason the period of the permit is allowed to pass, and the explorer wants to continue his researches, if there is no objection, the ministry of public instruction, after an agreement with the director of the Museum, may grant a permit for an additional period, not longer than one year.

ART. 18. The ministry of public instruction will collect, on the permits of excavation, on account of the Museum: On a permit from one day to six months, 5 piasters; on a permit from six months to one year, 10 piasters; on a permit from one to two years, 20 piasters.

ART. 19. If, after having obtained the permit, the excavations are not commenced within the period of three months from its date, or after having commenced them they should be discontinued for two months, the permit will be annulled; and if the explorer wants to renew it, the ministry of public instruction, with the director of the Museum, may continue or not the old permit, or cancel it and furnish a new one in its place.

ART. 20. The permit for excavations shall not embrace a larger area than ten square kilometers. If, after the commencement of the excavations, an objection is found on the part of the Government, on the order of the ministry of public instruction the works shall be temporarily stopped, and the time of stoppage shall not be accounted for in the period of the permit, and the explorers will have no claim for expenses or damages on account of that stoppage.

ART. 21. At the places where excavations are to be made the Government will keep an able and capable official, and the traveling expenses and salary of this official, after having been fixed by the authorities, will be collected from the excavators in full and paid to him monthly by the treasurer of public instruction. If the excavations are finished before the expiration of the permit and the researches abandoned, the surplus of the money paid for the salary of the official shall be returned to the excavator.

ART. 22. No permit of excavation shall be granted to officials of the Ottoman or of a foreign government for excavations to be made within the district of their official post.

ART. 23. The transfer by the recipient of a permit of excavation is forbidden.

ART. 24. A person can not have permits for excavations in more than one place.

ART. 25. Those who by accident discover antiquities are bound, if at Constantinople, to inform the ministry of public instruction within five days; and if in the provinces, to inform the local authorities within ten days.

ART. 26. At the expiration of the permit, or at the termination of the excavations, when the excavator gives notice of it, if it is found that he has fulfilled all the conditions of the regulations, the money he had deposited as security will be returned to him in accordance with the receipt.

ART. 27. The amount produced by seizures of antiquities or, on condemnation, from sales at public auction in accordance with the rule by an official auctioneer, and the money accruing from divisions with the owners of antiquities, and also fines and fees of permits, and the product of confiscations, shall belong to the treasury of the Museum.

CHAPTER III.

ART. 28. The importation from abroad of any kind of antiquities is free and exempt from custom dues, and any kind of antiquities which are to be transported from one district to another within the Ottoman dominions are exempt from internal duties.

ART. 29. Permission for the re-exportation of antiquities introduced from abroad into the

antiquities by the owner and shipper and transmitting it to the director of the Museum through the ministry of public instruction, and in the provinces to the boards or commissioners of public instruction, and in localities where there are no such boards or commissions to the local authorities. The owner of antiquities introduced into the Empire from abroad is bound, within eight days, to transmit a list of them, as before stated, to the administration of the Museum through the ministry of public instruction, and in the provinces to the board or commission of public instruction, and if there is no such board or commission to the local authorities.

ART. 30. In any case the re-exportation of antiquities imported from abroad, and the transportation from one district of the Empire to another of antiquities found within the Empire, is necessarily subject to an official authorization, which can be procured from the ministry of public instruction with the agreement of the director of the Museum.

ART. 31. The antiquities exported without the special permit of the ministry of public instruction shall, if captured, be seized or confiscated in the name of the Museum.

ART. 32. The granting of the official permission to export antiquities into foreign countries, though reserved to the ministry of public instruction, with the consent of the director of the Museum, is subject to the following conditions:

- (1) The Museum should possess already a duplicate of the kind.
- (2) That it should be established that the said antiquities have been imported from a foreign country.

CHAPTER IV.—PENAL PROVISIONS.

ART. 33. Those who appropriate antiquities found on the ground or exhumed on private or Government property, will be liable, in accordance with article 138 of the penal code, to damages and a fine, and to imprisonment from one month to one year.

ART. 34. If those who have accidentally discovered some antiquities do not give notice of it they, after being deprived of the share to which they had a right, are punished with a fine equal to one-fourth of the value of their discovery; and if those antiquities are out of reach, besides the fine, they will have to pay their total value.

ART. 35. Those who, in transporting from one district to another antiquities found within the Empire, violate article 32 will be submitted to a fine from 1 to 5 Turkish pounds.

ART. 36. The lawsuits which may originate out of the regulations shall be heard in the ordinary courts of law.

ART. 37. The ministry of public instruction is charged with the enforcement of the present regulations.—The 23d of Rebbi-ul-Akhir, 1301, and 9th of February, 1299: (*i. e.*, February 21, A. D. 1884.)

CULTIVATION AND PREPARATION OF PRUNES IN FRANCE.

According to Theophrastus, the prune was cultivated in Asia Minor in most remote ages. Pliny speaks of its cultivation by the Romans, and makes mention of eleven varieties proceeding from the domestic prune introduced into Italy by Caton the ancient. It grew without cultivation in the environs of Damascus, and a very rustic and vigorous variety, known as the black Damascus, is much used by nurserymen as subject for grafting all other varieties. Its introduction into France is attributed to the Crusaders. If tradition is exact, this valuable fruit was first cultivated in the southwest of France by the inmates of a convent near Clairac. In traveling from Aig-
native valley of the Lot, one sees fertile

loves a temperate climate, does not confine itself to this special section of France, but is profitably cultivated wherever climatic and soil conditions are favorable to its growth, as is demonstrated by its extensive cultivation in the valley of the Loire, the departments of the Garonne, Dordogne, Tarn, and Aveyron. The well-known brand, called Tours' prunes, come from the orchards of the Loire. Lorraine produces a variety called Quetsche, one of the best prunes for ordinary preserves.

CULTIVATION OF THE TREE.

The prune tree thrives best in clayey calcareous soil, and does not exact for its roots a loam of profound depth. Land adapted to the culture of the vine is also partial to this tree. In many localities these two valuable products are cultivated in conjunction, as the broad leaf of the vine is especially useful in protecting the roots of the tree from the intense heat of summer. Land thus planted and valued at 2,500 francs the hectare ($2\frac{1}{2}$ acres), would be worth but 2,000 francs if planted in vines alone.

Arboriculturists recommend that to obtain successful production the prune tree should be grafted. This practice insures a faithful reproduction of the species guaranteed. The usual custom in this country in beginning or renewing an orchard is to buy the young trees from nurseries ready for transplanting, and immediately put them into the ground.

GATHERING AND PREPARATION.

When the prune is ripe it is covered with a sort of glaucous powder called flower, which greatly adds to its value as a table fruit. As the gathering is an important factor in the subsequent value of the prune, great care and good management are indispensable. The fruit is usually gathered after the heat of the day has dissipated the humidity of the night. When possible, straw is carefully spread beneath the trees to prevent the fruit coming in contact with the earth. The prevailing custom, however, is to harrow the ground before gathering the plums. Only such fruit as readily falls when the tree is slightly shaken is gathered. As soon as harvested the fruit is taken to a building, properly called the fruitery, where it remains for a few days to complete maturity. Prunes are subjected to not less than three, and frequently to four, distinct cookings before being pronounced ready for market. Each of these operations has a special end, in sight of which great care is demanded. The first two preliminary cookings have for object evaporation of water contained in the fruit, and preparation for the final cooking, which dries the fruit and imparts a certain brilliancy much sought after by buyers. Sun-dried prunes are most delicious in taste, but the exigencies of the trade do not permit of such long preparation. In several districts of France most primitive means are practiced in curing the fruit for market. In Provence the freshly gathered fruit is plunged into pots of boiling water, where it remains until the water again arrives at boiling point. It is then removed from the boilers, placed in baskets, and gently shaken until cool,

plete desiccation. At Digne the prunes are not gathered until completely matured. Women peel the fruit with their nails to avoid injury to the soft pulp. The fruit is strung upon small twigs, and in such fashion as not to touch. These sticks of prunes are stuck into straw frames, which are suspended in the sun until the prunes easily detach from the stick, the pit is then removed, the fruit placed upon trays, exposed to the sun, and when thoroughly desiccated packed for market.

In the departments of Indes-et-Loire and Lot-et-Garonne immense ovens purposely constructed for prune cooking are used, but the proprietors often suffer loss from want of more commodious cooking apparatus, especially in windy or stormy weather, when the fruit falls in an embarrassing abundance, and he finds himself without means of immediately curing or preserving it. Most prunes are subjected to a preliminary washing to free them from dust or sand that may have adhered to them in falling to the ground. After washing, the fruit is exposed to the sun or air on beds of straw, or the trays upon which it is to be cooked, to rid it of all humidity. When dry it is spread in a single layer on the tray and at once submitted to the oven. The trays used in rural districts are quaint affairs, varying in form, dimensions, and construction, according to locality. They are made during the winter months by peasants, are clumsy and cumbersome, and the only excuse for their use is that the peasant can not afford to buy, and is not skillful enough to make better ones. They are very primitive in their construction, consisting of a frame made of hoop, to which is fastened a wicker-like bottom fashioned from rushes or willow twigs. They hold from 12 to 18 pounds of green fruit, representing about 4 or 6 pounds of prunes. Care is exercised in preparing the oven for the first cooking that the degree of heat shall not exceed 50 degrees centigrade, and in the second not over 70 degrees. If the heat is too strong, an ebullition is produced in the fruit, the skin bursts, the juice discharges, the prune becomes sticky, loses its flavor, and consequently its commercial value. After each cooking, which occupies about six hours, the fruit is removed from the oven and exposed to the air. When the prunes are cold they are carefully turned by women specially charged with this duty. They avoid disturbing the fruit while it is warm, as the touch renders it glutinous and prevents the juice from congealing. The third cooking is performed at a temperature of 80 to 90 degrees, and occasionally at 100 degrees. This, like the two preceding, should be conducted under most intelligent care. After the third cooking the prunes are sorted, and such as are found imperfectly cooked are again submitted to the oven. The degree of perfection in cooking is obtained when the fruit presents a dark purple color, solid and brilliant surface, malleable and elastic to the touch, and when the kernel is well done and intact in the shell. When these conditions are obtained the kernel ferments and alters the entire prune

about 70 per cent. of its original weight. The dark color depends largely upon the degree of maturity at time of gathering. The brilliancy of surface has no other commercial value than proving the cleanliness observed in preparation and attracting the attention of buyers. Besides the different usages of the prune as an aliment, it is also employed in producing an agreeable brandy.

CLASSIFICATION.

Prunes are divided into ten categories, taking the number of prunes necessary to a pound as a basis, and were formerly classified as follows: 1, trash or refuse, more than 125 to the pound; 2, small prunes, 120 to 125 to the pound; 3, small ordinary, 110 to 115 to the pound; 4, fine ordinary, 100 to 105 to the pound; 5, superior ordinary, second, 90 to 95 to the pound; 6, superior ordinary, for exportation, or half choice in France, 80 to 85 to the pound; 7, first choice, 70 to 75 to the pound; 8, extra choice, 60 to 65 to the pound; 9, imperial, 50 to 55 to the pound; 10, imperial flower, 40 to 45 to the pound.

This classification offered opportunities to sell inferior prunes for those of good quality, and to prevent this abuse was changed and simplified as follows: No. 1 represents 90 to 92 to the pound, No. 2 represents 80 to 82 to the pound, No. 3 represents 70 to 72 to the pound, No. 4 represents 60 to 62 to the pound, No. 5 represents 55 to 56 to the pound, No. 6 represents 44 to 45 to the pound, No. 7 represents 40 to 41 to the pound, No. 8 represents 34 to 35 to the pound, No. 9 represents 30 to 31 to the pound.

EXPORTATION.

When ready for exportation the fruit is pressed flat between two cylinders covered with rubber, and then packed into cases by a special machine called a packer. Many dealers still perform this operation in the primitive manner of foot pressure, which is simple, speedy, and equally as satisfactory. Bordeaux is the principal center of this particular commerce, which is yearly increasing. Besides the large amount of prunes exported to European countries by way of rail, there are about one hundred vessels annually leaving this port loaded with this valuable and succulent product. The most important exportation of this production is to the United States. During the past eight years \$4,553,000 worth of prunes, or an annual average of \$569,125, have been invoiced through this consulate as will be seen by the following:

Years.	Value.
1880	\$219,736.68
1881	525,052.58
1882	369,150.64
1883	661,166.69
1884	577,480.58
1885	792,640.96
1886	840,299.19
1887	568,356.82
Total	4,553,000.00

OVENS.

In the beginning of the prune industry many devices were employed for their proper conservation. The first ovens were very primitive, and the work of preparing the fruit for market laborious. At present there are many different kinds of ovens in use, possessing more or less distinct features, but about the same in general principles. The most generally used are the "Bournel" and the "Marletean" ovens. The only ovens in use are of French patent and make. — BORDEAUX, *September 5, 1888.*

GEO. W. ROOSEVELT,
Consul.

COAL-MINING STATISTICS OF BELGIUM.

The following is a comparative table of the operations of Belgian coal mines for the years 1886 and 1887:

Provinces.	Number of mines in activity.	Laborers.		Total expenses.	Average cost price per ton.
		Number.	Average annual wages.		
Hainaut.....	180	75,322	\$151.89	\$19,595,824.80	\$1.45
{ 1887.....	185	75,100	146.87	19,655,545.76	1.53
{ 1886.....	14	2,025	140.89	462,108.97	1.29
Namur.....	17	2,276	132.40	509,122.61	1.32
{ 1887.....	17	2,276	132.40	509,122.61	1.32
{ 1886.....	74	23,392	175.63	6,756,177.30	1.48
Liege.....	78	22,906	167.33	6,351,776.68	1.55
{ 1887.....	78	22,906	167.33	6,351,776.68	1.55
{ 1886.....	268	100,739	157.29	26,814,111.07	1.46
Total, Kingdom.....	280	100,282	151.12	26,516,445.05	1.53
{ 1887.....	280	100,282	151.12	26,516,445.05	1.53
{ 1886.....		457	6.17	297,666.02	.....
Increase.....	12				.07
Decrease.....					

Provinces.	Total production.	Total value of production.	Average selling price per ton.	Balance-sheet.	
				Profit.	Loss.
Hainaut.....	Tons.				
{ 1887.....	13,470,060	\$20,886,608.80	\$1.55	\$1,536,791.45	\$246,007.45
{ 1886.....	12,801,540	20,352,342.34	1.59	1,118,145.50	421,348.92
Namur.....	359,255	441,497.73	1.23	6,358.19	26,969.43
{ 1887.....	359,255	441,497.73	1.23	6,358.19	26,969.43
{ 1886.....	384,660	475,171.21	1.24	3,317.09	37,268.49
Liege.....	4,549,309	7,172,985.89	1.58	546,875.16	130,462.56
{ 1887.....	4,549,309	7,172,985.89	1.58	546,875.16	130,462.56
{ 1886.....	4,099,343	6,683,093.99	1.63	567,047.51	235,730.20
Total, Kingdom.....	18,378,624	28,501,092.42	1.55	2,090,024.79	403,439.44
{ 1887.....	18,378,624	28,501,092.42	1.55	2,090,024.79	403,439.44
{ 1886.....	17,285,543	27,510,607.54	1.59	1,688,510.10	694,347.61
Increase.....	1,093,081	990,484.88	.....	401,514.69	.....
Decrease.....			.04		290,908.17

COMPARATIVE COST OF MANUFACTURING STEEL RAILS IN PENNSYLVANIA AND IN ENGLAND.

In my report on coal, iron ore, and pig-iron published in CONSULAR REPORTS, No. 64, of 1886, I gave the comparative cost of pig-iron making in England (Staffordshire) and America. I have extended my inquiries to other parts of England, principally the Middlesborough district, and to Pennsylvania recently, and found the relative positions given in my report corroborated by these recently-obtained facts. Pig-iron, however, plays so important a part in an economic sense, and is of such wide interest to the industrial world, that it will be necessary to state here the more detailed facts, especially as they bear so predominately upon the price composition of steel rails.

It will be found that the price differences of labor on the spot where manufacturing is conducted are very small between the two countries in steel rail making, and even in pig-iron making not very material. The main differences are in the transportation expenses. Where one or the other—the ores, coke, or coal—have to be transported hundreds of miles to the furnace, iron can not be made as cheaply as where the furnace is so situated that all these materials are found within easy reach by carting, and are dumped into the barrows to be raised up to the cupola, as in some parts of America and England.

Iron, however, is of as varied a nature as wool. Iron fit for one purpose would not answer for others, and where comparisons are being made with steel rails made on the Bessemer process, as in America, the same relative quantities have to be found, if the comparative statement is to be of value. In England the Bessemer process is mostly used, the same as in America. Hematite ores used in the process are getting very scarce, however, in England, and large quantities are imported, from northern Spain principally, the same as in America. The native ores are, however, used very largely, too, in the basic process, and I shall give an account of cost of both processes in England, the Bessemer and basic. In America the latter is not employed, and very large ore beds, most advantageously situated in the immediate neighborhood of rich coal fields, can not be made use of for steel rail making, as the Bessemer manufacturers, as a matter of note, control the patents and the proprietary rights of this process too, and have not permitted to others their use for the purpose of manufacturing basic steel, save under conditions that would render the industry unprofitable.

In England the manufacture of steel rails has almost entirely been removed to the sea-shore. The transportation of the ores, as well as the transportation of the finished rails for export, is, therefore, reduced to one carriage from the ocean steamers to the furnace, and from the furnace to the

situated in Sheffield, where I had expected to obtain information on the subject, had removed their rail mills to Workington, on the west coast of England. Middlesborough and neighborhood towns on the Tees are large producers of steel rails. Here the advantages for shipping and receiving are very great. The ocean steamers are wharfed alongside the works and the unloading and reloading on trucks are all the intermediate labor and expense required. The native ores for basic steel are not far distant. The Durham coal-fields supply coke at a comparatively small transportation expense, according to the distance, from 2 to 3 shillings. The foreign ores are brought to the wharf close to the furnace, and so all advantages are made use of to save where alone savings are obtainable in the elimination of distance by judicious locating.

PIG-IRON.

Mentioning to one of the leading furnace owners of Middlesborough, an accomplished engineer, that two furnaces in the neighborhood of Pittsburgh turned out 2,800 tons per week, he gave me as his opinion that he does not find the American furnace system of very large output per furnace advantageous. Others have expressed the same views to me. "The original plant costs the same relatively whether two small furnaces or one large one. The number of men is the same per ton, and is regulated by the output. The high rate to which the American furnaces are put is a heavy wear and tear on them." He has blown out a furnace lately which needed no relining for sixteen years; the large furnaces in America need it every two years. Each of his furnaces has made during that time nearly 400,000 tons of iron, which, at 1 shilling per ton, would have more than paid itself. The gentleman stated readily, and from his own observation, that men in America work much harder than in England.

As to mining in the Cleveland district, the ore is of a soft nature and easily mined; it is of 31 to 32 per cent. Some of the mining is surface mining and other by shafts. A miner can mine easily 5 tons a day, working eight hours, for which he gets 10 pence a ton. In very rich seams they mine as much as 6 to 7 tons. The employment is very regular, and 4 shillings a day is about the average for pretty nearly the whole year at the present time. The wages would be the same in bad times, too, only with the difference that the men would then have four to five days work a week only.

The differences in the labor cost in pig-iron making are caused principally by the quality of ore, the richer ores naturally requiring less wheeling, etc., to the ton of pig-iron.

The coke costs in Durham, put on cars, 8 shillings, or \$1.94 per ton; ~~two-sixths~~ or 60 cents per ton;

The cost of pig-iron is as follows:

Cost of Cleveland iron used for basic steel.

	s.	d.	
3 $\frac{1}{4}$ tons of ore at 4s. (96 cents).....	13	0	\$3.14
1 $\frac{1}{10}$ tons of coke at 10s. 6d. (\$2.55)	11	6.6	2.80
$\frac{3}{5}$ ton of limestone at 3s. 6d. (84 cents)	2	0.4	.49
Labor.....	4	0	.97
Wear and tear, repairing, stores, etc.....	2	0	.48
Office expenses, etc.....	0	6	.12
Total	33	1	8.00

Hematite iron.

The iron is Spanish ore of 50 per cent. brought from Bilbao. Cost, 7s.; freight, 6s. 6d.; total, 13s. 6d., or \$3.28 per ton.

Cost of iron for Bessemer rails.

	£	s.	d.	
2 tons of Bilbao ore at 13s. 6d.....	1	7	0	\$6.56
1 ton of coke at 10s. 6d.	0	10	6	2.55
$\frac{2}{5}$ ton of limestone at 3s. 6d.....	0	1	4 $\frac{1}{8}$	.33
Labor.....	0	3	3	.79
Wear and tear, etc	0	2	0	.48
Office expenses, etc.....	0	0	6	.12
Total	2	4	7 $\frac{1}{8}$	10.83

The four furnaces of the firm turned out in the week of November 12, 1887, which may serve as an average: Cleveland iron, 665 and 507 tons = 1,172 tons; and in two furnaces, hematite iron, 836 $\frac{1}{2}$ tons. Total, 2,008 $\frac{1}{2}$ tons, at a cost in labor of £351 19s. 2d., or 3s. 6.1d. per ton, equal to 85 cents.

Of course, it is not possible to exactly state the precise cost of labor of each species of iron made simultaneously in the different furnaces for which one general labor account is kept. The cost, as stated here, is pretty nearly the same as in other Middlesborough furnaces. From the proprietor I have obtained a specified statement, a copy of the pay-roll of every laborer employed, and wages paid, which foot up as stated above. Other iron-masters gave me the same cost on inquiry.

The statement of another firm is for four furnaces of 1,674 tons only. Two of these turned out 744 tons, one 522 tons, and one 408 tons. Ore, 3 $\frac{1}{4}$ tons in Cleveland iron, 2 tons in hematite iron; coke, 1 $\frac{1}{10}$ tons in Cleveland iron, 1 ton in hematite iron; coal for calcining, $\frac{1}{10}$ ton; labor, 3s. 6d., average; office expenses, rates, taxes, 9d.

AMERICAN BLAST-FURNACE WORK.

The American furnaces are owned by the company manufacturing steel rails. They have eight furnaces.

of Cornwall iron in its output of steel rails. They use for their iron Cuban and European ore of 58 per cent. The quantities used per year are 60,000 tons from Cuba and 200,000 tons from Europe. The cost of ore per ton of pig-iron is \$11, or, at 58 per cent., \$6.38 per ton at the furnace, against 2.90 cents duty added would still leave \$2.73 to be accounted for as covering the freight surplus charge from Bilboa or North Africa to Philadelphia over freight cost to Middlesborough and the inland transportation from tide-water to the furnace, a distance of about 80 miles.

The fuel.

The fuel is three-fourths coke and one-fourth anthracite coal. The coke costs \$4.75 per ton delivered at the works; the coal \$2.85 per ton. The coke at Connellsville was then \$2 per ton, but at the later date of my visit in the coking region it had receded to \$1.75, put on board cars, and would, therefore, stand at \$4.50 delivered at the furnace. The difference would be in the transportation expense, which would seem rather a high rate. Coke, however, has been sold as low as 90 cents per ton at the ovens, and even at the present price is cheaper at the place of manufacture than at the ovens at Durham, where the English coke is obtained.

COAL MINING AND COKING.

Not knowing whether I shall be able to recur again to the subject in the near future, and as it bears no small part in the economy of production in the elements of iron, and therefore steel making, I will give the leading competitive points in this important product here. Connellsville, Pa., and Durham, England, are the leading coking centers of the two countries. In mining the natural advantages are on the American side, where the seams are much thicker, about 8 feet against some 4 feet coking seams in Durham. The Durham cost is as follows:

Labor of mining and putting into trucks, 2s. to 2s. 3d., or about.....	\$0.51
Other charges, 6d. to 8d. a ton, or about.....	.14
Royalty, 5d. to 9d. a ton, or about	.14
Total	.79

There is realized from 1 ton of coal 60 to 62½ per cent. of coke, so that it requires, say—

1⅔ tons of coal to 1 ton of coke, or	\$1.32
The cost of coking is 9d. to 1s. 3d., or.....	.24
Labor in drawing and filling, repairing, smiths' work, etc., all labor putting on board	.24

Connellsville coke.

The ruling prices of coke in Connellsville, from 1881 to 1886 inclusive, taking the highest and lowest prices for the years, were:

1881	from	\$1.50	to	\$1.75
1882	"	1.15	"	1.75
1883	"	.90	"	1.20
1884	"	1.00	"	1.10
1885	"	1.10	"	1.20
1886	"	1.20	"	1.50

The average for the six years can not be taken higher than \$1.35. The mining wages are on a sliding scale; the scale is as follows:

Furnace coke, f. o. b. cars, selling at \$1.35, the rate per 100 bushels is for mining and loading room coal.....	\$0.90
For mining and loading heading coal.....	1.05
For mining and loading heading coal, wet places.....	1.12½

For each and every advance of 10 cents per ton over and above \$1.35 per ton in the price of furnace coke, f. o. b. cars at ovens, 2½ cents per 100 bushels shall be added to the above prices for mining and loading coal, etc.

At this average of \$1.35 the mining wages would then be, taking \$1 as the average per 100 bushels (27 bushels to the ton), 27 cents, and at \$1.75 per ton of coke, the wages would be 10 cents more ($4 \times 2\frac{1}{2}$ cents) per 100 bushels, or 2.7 cents per ton; total, 29.7 cents per ton of 2,000 pounds; brought to the gross ton of English weight, 33 cents. The mining cost is, therefore, considerably less than in England. The yield of coke out of a ton of coal is, for Connellsville coal, 66 per cent., requiring 1½ tons of coal for 1 ton of coke.

A fair view of the cost of coke in Connellsville may be taken from Mr. Joseph D. Weeks's report on the manufacture of coke to the Department of the Interior for 1885. I will, for corroboration, give his statement in full relating to the cost of coke making, which can then be set against the corresponding English items for comparison:

There has been considerable discussion near the close of 1885 as to the actual cost of coke to the producer. I have before me three statements of cost. Two are for actual workings for the month of November, the third is the estimate of a miner. They are as follows:

	No. 1.	No. 2.
Average cost of coal to ton of coke, including royalty.....	\$0.767	\$0.818
Average labor at ovens.....	.270	.328
Average supplies.....	.073	.070
Average repairs	.062	.029
Total	1.172	1.245

The above are actual costs, not estimates, and may be taken to fairly represent the average, not the best located works. The items of repairs may vary somewhat as well as the cost

COST OF MANUFACTURING STEEL RAILS.

The miner's figures of cost are as follows; they represent the daily expenses of a bank of 40 ovens, twenty being drawn each day:

Cost of coal (on royalty one-half cent per bushel).....	\$12.35
Seventy cars of coal (mining 27 cents a car).....	18.90
Boss's wages.....	2.00
Oil, posts, rails, etc.....	1.50
Charging ovens.....	2.00
Leveling.....	1.60
Drawing twenty ovens.....	11.00
Interest on capital.....	2.50
Syndicate's commission.....	6.30
Total.....	<u>58.15</u>
Production 58.8 tons coke at \$1.20..	70.56
Less daily expenses.....	<u>58.15</u>
	12.41

It will be noted that this makes the cost of getting the coke on the cars, ready for shipment, 98.9 cents. It will be seen that this estimate allows only \$1.50 for supplies, or less than 3 cents a ton, as against 7 cents in the above operator's account. Nothing is allowed for repairs, which are at least 5 to 7 cents—as an average, say 6 cents. Nor is there any allowance for labor in mining and hauling the coal, other than the miner's wages. Add all these to the miner's cost, and it would not come much below the operator's cost.

If, then, 98.9 cents is the net cost of coke, including mining, royalty, coking expenses, and labor, interest on capital and syndicate's commission, according to the miner's view, and \$1.17 covers all additional allowances for supplies, repairs, hauling the coal outside the mine, etc., as stated from the manufacturer's side, \$1.172, then, would be as per English weight + 11 per cent., 0.129, or \$1.30, against \$1.79 to \$1.92 English.

The several positions would be in cost of coke—

	Connellsville.		Durham.
	Short ton.	Long ton.	
Average cost of coal to ton of coke.....	\$0.607	\$0.673	\$1.08
Average royalty.....	.16	.1776	.23
Labor at ovens, supplies, and repairs.....	.405	.45	.48
Total.....	1.172	1.3006	1.79

LABOR COST IN PIG-IRON IN AMERICA (EASTERN PENNSYLVANIA).

The furnaces are worked by two shifts of twelve hours each. Each shift is composed of 16 men, or 32 men for the twenty-four hours on each furnace. 11.256 men for the eight furnaces, which is per man, at the 3,000

which gives 77.65 cents as covering all furnace labor expense of making a ton of pig-iron. The general labor cost was given me by the president as \$1.25, which leaves, therefore, a margin of 47.35 cents for all incidental and yard labor of handling ore, coke, coal, and iron, unloading and loading, not included in the direct furnace work.

The general expense is given me as 12 cents per ton; sundries, supplies, electric light, etc., as 50 cents per ton—in both instances about the same as in the English account.

Taking the different items, then, we have the following positions in Bessemer pig-iron in eastern Pennsylvania, made of Spanish and Cuban ores, against English iron of the same class:

	Eastern Pennsylvania.	Middles- borough.
Ore.....	\$11.00	\$6.56
Limestone	.40	.33
Fuel	4.50	2.55
Labor.....	1.25	.79
General expense	.12	.12
Sundries	.50	.48
Total.....	17.77	10.83

It will be seen that the only marked differences lie in the ore and fuel account, due to causes explained above.

COST OF MANUFACTURING BESSEMER STEEL RAILS IN ENGLAND.

The steel mill from which I have taken this account works in shifts of twelve hours. They make 40 charges per day, have 2 converters, and turn out 7 to 8 tons in each heat. The weekly output is 1,500 tons, and the number of men employed is 600. The weekly pay-roll is £950. The average cost of labor per ton is, therefore, 12s. 8d., or \$3.07 per ton. The several items in this sum stand as follows:

	s.	d.	
Labor in converting	3	6	\$0.85
Labor in rail-making from the ingots	8	0	1.94
Additional labor	1	0	.24
Total.....	12	6	3.03

The cost of pig-iron is taken as 45 shillings per ton; spiegeleisen, 80 shillings per ton.

	s.	d.	
It takes $1\frac{1}{10}$ tons of hematite iron at 45s.....	49	6	\$12.38
It takes $1\frac{1}{2}$ hundred-weight of spiegeleisen iron at 4s.....	6	0	1.44
It takes 14 hundred-weight of coal at 7s. 6d. per ton.....	5	3	1.26
Labor.....	12	8	3.07
Total.....	73	5	18.15

light of a profit, I was answered, "Should we make the sum of 4s. 1d. profit we should be pleased. It is a long time since rail-makers could see a certainty of 4 shillings per ton."

It must be understood that this is about the lowest price steel rails have ever reached in England, and it is the general expression that it is hard work now to get a new dollar for an old one. That the price is not a paying one can be seen from the favorable consideration which is given by English manufacturers to the proposal of German rail manufacturers to revive the old steel rail combination, which has in view the raising of the price and the parceling out of the output and the trade between the English, German, and Belgium manufacturers.

The wages are, for fitters, turners, roll turners, and brick-layers, 5s. 6d., or \$1.34 per day; for smiths, enginemen, and joiners, 5s., or \$1.22 per day; for men at rolls and furnaces, average 7s., or \$1.70 per day; and for outside men, 4s., or 97 cents.

COST OF BASIC STEEL RAILS.

The mill is one which, in the opinion of iron-masters, is supplied with the best improvements and equal to the best American mills in labor-saving arrangements, etc. I can not say that in going over it I came to a like conclusion. I find the American rail mills which I have seen far ahead in improvement and the introduction of labor-saving devices over any at least that have come within the scope of my present observation in England. On the whole, it is conceded willingly by English makers that America surpasses them in the output and improved methods of manufacture.

The iron used in this steel is Cleveland pig, but the cheaper price per ton is balanced by the greater amount of iron required for a ton of rails. About 800 men are employed, who draw in weekly wages (the week for which the account stands) £1,294 1s. 6d., or \$6,276, equal to \$7.84 per day, or, per ton, 10s. 9½d., or \$2.62. The account is as follows:

	s.	d.	
1.3110 tons of pig-iron at 33s. 4d.....	43	8¼	\$10.62
0.1410 tons of ferro manganese (spiegeleisen) and hematite.....	9	10¼	2.40
Fuel.....	5	4	1.30
Labor (converting, 4s. 4d.; rail-making, 5s. 11d.).....	10	3	2.49
Additional.....	8	10½	2.16
	78	0	18.97

Total

The additional are given me as being in reality 9s. 9d., or \$2.37, in excess of the other account. Labor items like brick laying, etc., contained in the labor account of the hematite rail mill, are here contained in the ad-

THE AMERICAN COST OF MAKING BESSEMER STEEL RAILS.

The time when this inquiry was made in America was in 1887, a year of high prices. Steel rails had sold during the year at prices ranging from \$40 to \$32—during the greater part of the year being very close to the former sum named. At the time of my visit, in December, they were about the last named price. During the year wages were raised twice, each time 10 per cent. Whether these advances are still in force, I can not tell. It is very doubtful, however, in view of the fact that steel rails are quoted now at \$28.50, f. o. b., to \$29, which is barely \$10 above the English price, a price likely to be advanced at a very early day as being unremunerative to the makers.

The weekly output is 4,500 tons. The mill has four converters, but only three working. The men at the converters work in three shifts of eight hours each, the rail-making employes two shifts of twelve hours each. In all 1,048 men are employed in the steel works. The pay-roll for the month was about \$57,000. This is \$54.38 per man per month, and at twenty-five working days \$2.17½ per day and \$13.05 per week—about two-thirds more than the average English wages in steel mills. If we divide the amount of money paid for labor over the output, however, we shall find no such difference to exist, as these higher earnings might leave people to suppose. The weekly wages of the month of fairly even distribution of work over each week and steady employment of the men stand as \$13,680, and the output of 4,500 tons gives us labor cost per ton thereof \$3.04 of all moneys paid out on this heading.

Salaries and expenses were stated at 50 cents per ton. On an output of 225,000 tons, \$112,000 for years of equally full output. The general labor cost was stated to me as \$3.85 per ton. I can not well understand what items these additional 84 cents would comprise, as the outlays for wages of \$56,000 to \$58,000, I was told, cover all labor employed at the steel works. I give this as received and leave closer analysis to a future re-examination of the details.

The different items of cost are composed of the following factors, as given from the mill account:

Items of cost in 1 ton of steel rails in eastern Pennsylvania.

1 ton of pig-iron.....	\$18.00
3 hundred-weight spiegeleisen.....	4.00
Fuel.....	2.00
Labor	3.04
Sundries	.50
Additional labor (unexplained).....	.84
Total	28.38

At \$27 a ton for spiegeleisen, the above \$4 represents 3 hundred-weight

With \$3 of spiegeleisen, $1\frac{1}{20}$ tons of iron and \$2 worth of scraps are used, and with \$4 of spiegeleisen, 1 ton of iron is said to be sufficient. While the English only use in all 1.175 tons of weight, this account would give us 1.30 tons of weight per ton of rails, which, if correct, would need further explanation than I can give at the present writing. At any rate the difference in the weight would be returned again, or approximately so, in the value of scrap, ends, or misfits.

On the whole it will need no demonstration to show what has been intimated in the opening pages of this report, that the differences in the labor cost, not alone of steel making, are not very great and come very nearly the English cost, but also in the materials used in its production. The difference of cost lies mainly in the transportation expense of the component parts of pig-iron used in the manufacture of Bessemer steel.

The relative positions in steel rail making, as well as the fact of high wages, compatible with relatively cheap cost, may be realized from the comparative statement of the output of the two mills, which gave the subject of this report:

Tons of Bessemer steel rails turned out per week in a steel mill in eastern Pennsylvania, 4,500; total number of men employed, 1,048; output of tons per man employed, 4.3; average wages per day, \$2.17 $\frac{1}{2}$; labor cost per ton of all employed in steel mill, \$3.04; tons of Bessemer steel rails turned out per week in a steel mill in England, 1,500; total number of men employed, 600; output of tons per man employed, 2.5; average wages per day, 5s. 6d. = \$1.33; labor cost per ton of all employed in steel mill, 11s. 6d. to 12s. 8d. = \$2.80 to \$3.08. — TUNSTALL, *October 2, 1888.*

J. SCHOENHOF,
Consul.

LABOR CONDITIONS AT HAMILTON, ONTARIO.

The report of the Ontario Bureau of Industries for 1887, just issued, treats, among other things, of wages and the cost of living. This city furnishes reports from only 122, all over sixteen years of age. From the whole province 3,354 individual returns were received, embracing 2,981 males and 322 females over sixteen years of age.

The average yearly earnings of the males who have families were \$426.75, which was \$1 higher than the average for 1884-'87. With extra earnings, and earnings of wives and children, the total average income of these families was \$449.61. The days of labor averaged 257 $\frac{3}{4}$, so that each day's pay averaged \$1.70. The cost of living for each family was \$412.80, and the average savings of each \$36.81 for the year. The 3,354 of male and female, 262 21 days each, and earned

the Royal Labor Commission in this city in the spring developed some facts, a compilation of which, prepared at the time, may serve to throw light upon the wage conditions here.

IRON WORKERS.

An operative in the American Nail Works testified that 50 hands are employed ten hours a day. The wages are higher than in Pittsburgh or Montreal, good nailers making from \$3.50 to \$4 a day. Twenty boys, at \$1.25 a day, are employed by the men, and no limit fixed by the union for the proportion employed. Scrap-iron is used in the manufacture of the nails.

At the Ontario Rolling-mills 250 men are employed nine hours a day, double shifts, and the hands are classified in the rolling-mills as heaters, helpers, and rollers. The heaters make \$4 to \$4.50, and their helpers from \$2 to \$3.50 per day, but the work is very hard and tends to injure a man's health. A roller makes from \$5 to \$6 a day, and his helper about \$1.75. The wages are paid on the same scale as in Pittsburgh, but the cost of living is cheaper in Hamilton. Men who come from the other side are more satisfied here than in Pittsburgh. The Hamilton Iron Forging Company mill is in operation about ten hours a day, double shifts, and each man will work about seven hours a day. The men work by the ton; a heater makes about \$6 a day and rollers about \$7; helpers get from \$1.75 to \$2. The wages paid are double what they are in England, but about the same as in Philadelphia. There is no union among the workers here. The men who work at night receive the same wages as the day workers, though the men much prefer to work on the day shift. The company employs the heaters' helpers, and the lowest wages paid to unskilled labor is \$1.15 a day, whereas in the States they only receive 65 cents. The largest iron manufactured was 400 pounds to the bar. A leading stove manufacturer thought that about 2,000 hands were employed in the fifteen foundries in the city, counting skilled and unskilled labor. The skilled hands were molders, scale makers, pattern makers, and stove mounters. The molders receive \$2.25 to \$3 a day; scale makers, from \$1.50 to \$2; pattern makers, \$1.75 to \$2.50. Molders average nine hours a day, and are usually through by 5 o'clock. The week hands work fifty-nine hours a week. He did not think ten hours a day was too much, except in cases of laborious work like molding. There are from 350 to 400 union molders in the city. In one shop union and non-union men work together, but there are only about 13 or 14 non-union men in the city. The hours of labor vary from nine to eleven, and the work is very laborious. The average yearly earnings of a molder, taking into consideration the time he does not work, would be \$1.35 a day. Quite a number of molders save money. During a slack time, about four years ago, 10 per cent. was taken off their wages with the understanding that when trade revived it would be restored. Last summer they concluded that the time had come to restore the deduction, and went on strike because the employers would not do so. The negotiations were carried on in a friendly spirit, and

cent., with an additional advance of 5 per cent. March 1 next. The organization was opposed to strikes and favored arbitration. The union has entered into an agreement with the employers not to ask for another raise of wages for eighteen months, in order to enable them to figure on prices. An employé of the Hart Emery Wheel Company stated that the company was established here to save the patent. Skilled mechanics are required in making these wheels, and their daily wages vary from \$1.50 to \$2.50, and they work ten hours a day. The raw material comes from the United States. Skilled wire-workers in the manufacture of wire-cloths for fanning-mills, windows, and locomotive smoke-stacks receive from \$1.75 to \$2. Some classes of wire are drawn in Montreal. Boys get \$2.50 a week and receive an advance of 50 cents every six months. They become skilled workmen in from four to six years. In one factory 18 girls are employed running a light automatic machine, and make from \$3 to \$6 or \$7 a week.

RAILWAY OPERATIVES.

Switchmen receive \$1.30 to \$1.40 per day and yardsmen get from \$1.50 to \$2 per day. Not much work is done on Sunday here, and the employés have twenty-six Sundays in the year to themselves. An engineer or fireman on the Grand Trunk is employed nine hours a day, and is paid extra for overtime at the rate of 25 cents an hour for drivers and 13 cents for firemen. A man's work is sometimes extended under exceptional circumstances to forty consecutive hours, and he has to keep awake all that time. A witness, who has been in charge of the locomotives at the Grand Trunk station here for thirty-four years, considered that the running boards on freight-cars should be 3 feet in width. Accidents caused by men falling from freight-trains were frequent. He would recommend that railings be placed along the outer edge of the roofs of cars, and thought an air-brake could be applied to freight-trains to do away with the necessity for hand brakes at a cost of about \$16 per car. The same kind of automatic couplings used on passenger-cars could be adapted to the freight-cars and thus do away with the present number of accidents from this cause. A law regarding couplings, in order to be effective, would have to be made international, in order that the same kind of couplings might be in use on all American roads. Applicants for positions are always tested in order to detect color-blindness before entering the service. The station-master at the Grand Trunk at Hamilton did not know of any suitable automatic coupling, as most of them had too much machinery about them which was liable to get out of order. Another objection was that loaded cars would be so much lower than light ones that the couplings would not work.

WORKERS IN CLOTH.

Company said that

about \$15 a week, and they pay their hands from \$2.50 to \$7 per week. Trimmers and cutters receive from \$8 to \$15 per week. The cloth used is made both in England and Canada, but the Canadian is not quite so good as the English. A woman sewing, say ten hours a day, can easily make \$1 a day and over. For the first few weeks apprentices get little or nothing, and then they are started at \$2.50 a week. Women who do this sewing complain that they can not make enough. A great many were widows, and others supported their husbands. The houses of the sewing women were comfortable, and all their needs were supplied, and when they came about the company's store they appeared comfortably and even stylishly dressed. The wages are lower now than they were a few years ago, but with the improved machinery in use he thought the hands can make more. He paid \$1.25 for having a child's coat made; mens' pants brought 12 to 50 cents. The men and women are paid exactly the same rates. All material is supplied except the thread, and the prices named do not include the button-holes, which are done by machinery.

RATTAN CHAIR WORKERS.

There are six factories in Ontario making children's carriages and chairs from the pith of rattan. Boys and girls were employed in the factories, earning \$4 to \$5 a week. The trade is increasing. The pith referred to principally comes from Hamburg, Germany, and is brought to New York as ballast and bought there. On the reed 25 per cent. duty is charged, though if the rattan is imported whole it is free.

WORKERS IN TOBACCO.

A tobacco factory here employs about three hundred hands of both sexes, ranging from fourteen to forty years of age. The average wages paid was \$1.25 for grown up people. As a rule the parents come to the factory and make the bargain for the employment of their children, whose wages range from \$3 to \$4.50. The children are not employed by the firm, but by the journeymen workers. When a boy becomes well up in the work he is apprenticed for three years, and then becomes a journeyman. The raw tobacco comes from Virginia and is used because a good article can not be grown here. The employes work nine hours a day. An experiment was made some years ago in shortening the hours of labor, and the firm found that it got as much work out of their employes in nine hours as they formerly did in ten hours, and were very well satisfied with the system. Saturday was the pay-day. The firm rewards merit by presents of money at the end of the year, paying out in this way from \$1,500 to \$2,000 annually.

PRINTERS AND TYPE-SETTERS.

An ex-president of the typographical union testified that 32 cents per thousand ems was paid to piece compositors on morning papers in Hamilton. Weekly hands in job offices receive \$11. All matter, except the advertise-

hands. About eight journeymen printers own their own houses, and five ex-journeymen now have job offices of their own. No plate matter is used upon the newspapers. There is a death benefit of \$75 connected with the typographical union. No black-listing has occurred in Hamilton. The wages here are lower than in the United States.

TELEGRAPH OPERATORS.

Operators work nine hours a day, and first-class men receive from \$40 to \$55 per month, and second-class men from \$30 to \$45. Female operators receive from \$30 to \$45 a month, and could not do press work. The operators are paid monthly and wished to be paid oftener, but their application had never been attended to. Wages were lower here than in Manitoba and the United States.

CLERKS AND SALESMEN.

Boys in grocery stores get about \$2 a week, and clerks average \$5.00 a year. They are employed from 7 a. m. to 7 p. m., and until 10 p. m. Saturdays.

SPINNERS.

In the cotton and woolen mills of Dundas the men earn from \$1.50 to \$2 a day, the boys \$3 a week and upwards, and the women and girls from \$3 to \$6 a week. The hands all work sixty hours per week, but the time is arranged so that they get a half-holiday on Saturday. If the hands are late they are fined one hour's pay. In the Hamilton cotton mills boys and girls go to work at fourteen years of age, and they are not employed without first bringing a certificate regarding their age from their parents. The average wages earned by a man was from \$8 to \$10 per week, a woman can earn from \$6 to \$8 per week, children from fourteen to sixteen years of age earn from \$2 to \$4 per week. A weaver has charge of four looms. The work is not unhealthy. Common laborers are paid \$1.10 per day. The hours of labor are sixty hours per week, with Saturday half-holiday, and payment is made fortnightly.

OTHER TRADES.

Painters receive \$1.25 to \$2.25 per day; millers, \$8 to \$10 per week; shoe-makers, \$10 to \$15 per week; and female operators on kid work from \$5 to \$9. The average pay of a farm hand is \$175 per year, with board. Men, women, and children are employed in the fruit industries; men receive \$1 a day, women from 75 cents to \$1, and children earn from 50 to 75 cents.

FRUGALITY AND THRIFT OF OPERATIVES.

The secretary of the Hamilton Loan and Building Association testified that each share of stock in his company represented \$2, and there were 3,333 shares in existence, payment on which was made at the rate of \$1 by mechanics, 203 by

years if the borrower pays 33 per cent. on his loan, and he gets the money for $4\frac{1}{2}$ per cent. and participates in the profits of the society. No speculators are allowed to enter the society. The only security accepted is a first mortgage, and the society only does business in the county of Wentworth. The president of the typographical union thought an ordinary printer working at the case would find it difficult to pay for a house in ten years. He did not approve of a working-man owning his house unless he had a permanent situation, because it ties him down too much. He, himself, merely put his money into a house and lot because he knew he could easily realize the amount on it again.

COMPLAINTS OF OPERATIVES.

A Burlington engineer thought that improved machinery being introduced has not benefited the skilled employé, but that the chances for him remaining in employment become more and more precarious every day. He did not think the working-people to-day enjoyed all their rights, and they did not have the same opportunities now; in fact, the improved machinery was encroaching upon their domain and tending to crowd them out. He did not think the financial condition of the working-man had improved during the past twenty-five years, and the condition of the farmer was worse. A machinist complained that wages were higher in England than in Canada for skilled workers, or at least the money could be made to go further there.

IMPORTED LABOR.

The Dominion immigration agent testified that during the year just closed 7,919 immigrants had come into his district, 3,421 of whom were English, 796 Irish, 1,434 Scotch, 790 Germans, 1,297 American citizens. He could not say how many of these came on assisted passages, the rules of the department regarding assisted immigrants granted such assistance only to agricultural laborers and domestic servants, and that only to the extent of \$2.50 each. Of the number of immigrants mentioned only fifty-nine were mechanics. He did not think that over 1 per cent. of the immigrants arriving in his district were pauper immigrants.—HAMILTON, ONTARIO, *September 13, 1888.*

ALBERT ROBERTS,
Consul.

THE INDIA RUBBER TRADE OF UPPER BURMAH.

Mr. Warry, of the British consular service in China, at present stationed as political officer at Bhamo, has made a report to the chief commissioner on the India rubber trade of the Mogoung district. Rubber was first exported from Upper Burmah in 1870, and until 1873 the trade was free to all. Since the latter year, however, the forests have been worked under the monopoly system, five Chinese firms being the joint concessionaires, two supplying the money and three superintending the work. The price ranged from 60,000 to 90,000 rupees per annum, but in the present year the sale of the right produced a lakh of rupees. The forests occupy an extensive Kachin district north of Mogoung and stretching east across the Chinese border. The Kachins are exceedingly jealous of interference with their trees, and although at first they made the mistake of over-bleeding the

up to the tiny topmost branches, they were obviously not drained to the extent of half their power. Mogoung is the head-quarters of the trade; four-fifths of the yearly supply is brought in there by Kachins in the employ of Chinese, the remaining fifth is purchased in the district by Chinese agents of the lessees. The practice is for the Chinese manager in Mogoung to make liberal advances to the Kachins to defray expenses during the collecting season; when the rubber is brought in the refund is made by selling the rubber to the manager at half the market price. The traveling Chinese agents, who also collect rubber, merely travel from place to place, buying such quantities as the Kachins offer, but as the latter have no standard weights they are usually cheated to the extent of about 70 per cent. The profit on this difference of weight more than pays the expenses of the agents. In most cases rubber is the subject of certain transit charges through the Kachin districts, tsawbwas, or local chiefs, levying a certain toll—perhaps two or three balls out of a hundred. So long as these charges do not amount to 10 per cent. there is no complaint. Whatever the toll, the Chinese manager and Kachin owner bear the loss in equal shares; but the latter is amply compensated by being housed and fed at the expense of the Chinese during his stay in Mogoung. Last year a new district was opened, and a Chinese capitalist employed 400 Chinese and Shan laborers to work the forests in the neighborhood of the amber mines. The local Kachins objected to the inroad and insisted on their right to the forests. A compromise was reached, 200 of the laborers being sent back at once, the remainder collecting rubber under Kachin supervision, to whom 10 per cent. was to be paid, and 200 Kachins, paid at the current rate, took the places of the 200 dismissed coolies.

MOORISH AGRICULTURE.

In the course of a report recently laid before Parliament on the agriculture of Morocco, the British consul at Tangier remarks on the prejudice of the Government against the exportation of grain, which is carried to such an extent that shipments between two Moorish ports are not allowed. The ground of the prohibition is that the price of bread, which forms almost the only food of the poorer classes, would rise so as to bring the people to the verge of starvation. There are no roads properly so called, and therefore the transport of grain by land is very expensive, so that the price varies greatly in districts comparatively close to each other. The quantity of seed sown in each district is only what is judged sufficient for the wants of the immediate neighborhood, and when the season is good the crop will sometimes not repay the cost of cutting. Within sight of Europe, and only four or five days by sea from London, the consul has seen fields of corn abandoned because they would not be worth the cost of harvesting. In the Tangier district much of the land is Government property, being held by a kind of military tenure; near the towns and among the hill tribes, mosques, and other religious institutions have considerable endowments in real property which have been bequeathed to them; many Moors also own large properties, but a considerable portion of the land is held by small farmers on a description of metayer tenure, one quarter of the crop being paid to the landlord. Labor is paid on the same system, the plowman receiving a fifth of the crop, a certain quantity of corn for food while working, and a pair of shoes. For this pay he plows the land, tends a pair of oxen, sows, reaps, and threshes. When there is a heavy yield of corn, and speed in harvesting is desirable, the custom is to call all the villagers in for one day to do the work without pay. The price of agricultural labor is about 9 pence a day for men and half that for women. Native farmers are averse to manuring the ground, alleging that it only causes the crop to be choked by weeds. Rotation of crops is practiced, barley, lentils alternating in dry ground; wheat, beans, millet, and maize on colder soils, and certain breeds of good horses, and certain

PERSIAN RAILWAYS AND COTTON GOODS IMPORTS.

Up to the present the Imperial Government has awarded two concessions for railways in the Shah's dominions, one to a Belgian company, the other to Hadji Mahommed-Hassan, a wealthy Persian merchant.

The first, which comprises only a short line from Teheran to the holy shrine of Shah Abdoul-Azzim, a distance of not over 11 kilometers (6.8 miles), is now virtually completed. It has been built though at very great cost, the rails and machinery necessary having all been transported from Resht, the Caspian sea-port, over the Elburz Mountains to this city upon mules. The second, still in course of construction, will measure about 20 kilometers (12.4 miles). It is designed mainly to facilitate the transportation of ore from the iron mines in the vicinity of Amol, and is intended to connect that town with the port of Mahmûdâbâd, on the Caspian. Its proximity to Russia, from whence the requisite material for its construction can be obtained by water with so much greater ease and so much less expense for transportation, will make its original cost fall considerably below that of the line first mentioned. Both of these enterprises, it will be observed, are local in their character and of but limited scope.

When it comes to the consideration of a great railway system such as the actual requirements of Persia demand, the laws of economy alone, in my opinion, indicate the necessity of beginning operations either at the Persian Gulf on the south, or at the Caspian Sea on the north, or from both ends of the line simultaneously. In the second and last case, however, the northern section would have no alternative but to purchase its material in Russia, or pay duties and cost of transportation through Russian territory, whilst the southern section could freely supply itself from the markets of the world at large. The general question of Persian railways is one to which European capitalists appear at this moment to be giving special attention.

ISPAHAN'S IMPORTATION OF COTTON GOODS.

A recent investigation has elicited the fact that the city of Ispahan, a distributing point for southern Persia, annually imports from Great Britain alone £125,000 sterling worth of cotton goods, mainly gray shirtings, which, being afterwards dyed with indigo on the spot, constitute the ordinary blue material so generally used for clothing among the native peasantry. If American cotton cloth can successfully compete with that of England in the markets of China and Japan, there would appear no good reason why it should not do the same here. A practical demonstration of the possibility of supplying the same article at more favorable rates than now prevail would not only secure us control of this entire trade in both north and south Persia but give it at once a decided impetus. — TEHERAN, *September 4, 1888.*

TOBACCO MONOPOLY IN FRANCE.

Referring to the several reports published in Nos. 2, 22, and 33 of the UNITED STATES CONSULAR REPORTS upon the tobacco monopoly of France, I beg to submit for your information more recent statistics on the subject. The revenue derived by the French treasury since the establishment of the monopoly has constantly increased till the year 1885, when the receipts under that head reached their maximum, viz, \$72,883,000. In 1886 the diminution has been quite marked, amounting to more than \$1,000,000.

In 1887, however, there was a slight increase of some \$39,000. The following statement shows, for the period from 1878 to 1887, the quantities of tobacco sold in France, exported to Algeria and foreign countries, and the sum total of receipts:

Year.	Total quantities sold.	Total receipts.	Increase.	Decrease.
1878.....	71,078	\$64,422,000	.....	.....
1879.....	71,914	65,010,000	\$588,000	.....
1880.....	73,987	66,807,000	1,797,000	.....
1881.....	75,479	68,546,000	1,739,000	.....
1882.....	77,203	70,299,000	1,953,000	.....
1883.....	78,995	71,862,000	1,563,000	.....
1884.....	80,191	72,883,000	1,021,000	.....
1885.....	80,003	72,473,000	.....	\$410,000
1886.....	79,415	71,396,000	.....	1,077,000
1887.....	.....	71,435,000	39,000	.....

In order to better understand the cause of decrease in the revenue from the sale of tobacco during these last years it is necessary to compare in detail the receipts according to the different kinds of tobacco sold for internal consumption.

The following statement shows the results for the years 1884 and 1886 corresponding to the maximum and minimum amount received for manufactured tobacco sold for internal consumption:

Articles.	Receipts.		Increase.	Decrease.
	1884.	1886.		
Cigars, French.....	\$26,371,000	\$25,120,000	.....	5
Cigars, Havana Manila.....	819,000	644,000	.....	21
Cigarettes.....	3,509,000	3,365,000	.....	4
Smoking, chewing, and snuff tobacco.....	41,480,000	41,545,000	0.6	.....
	72,179,000	70,674,000	.....	2

the commercial crisis which exists at the present time, and which constrains every one to reduce expenses.

It is also highly probable that the perpetration of fraud against the revenue and the clandestine sale of fraudulently imported cigars and hand-made cigarettes has caused a certain diminution in the Government revenue.

France has been, and is still, the country where the consumption of snuff tobacco is the greatest. It was constantly on the increase till 1869, when it reached a total of 13,000,000 pounds per annum, making a yearly average of 7 ounces per inhabitant. After the Franco-German war the average consumption was reduced to 6 ounces per capita, and now, notwithstanding the improvement in its manufacture, the consumption is only about 5 ounces per inhabitant.

The statement given below shows the total of foreign tobacco imported into France during five years ending with 1886:

Year.	Tobacco leaf.	Tobacco manufactured.
1882.....	\$5,288,000	\$772,000
1883.....	6,812,900	775,000
1884.....	5,944,000	1,139,000
1885.....	5,790,000	463,200
1886.....	6,214,000	212,300

The value of tobacco leaves imported from the United States into France for the same period was as follows:

1882.....	\$2,938,526
1883.....	3,804,235
1884.....	3,021,241
1885.....	2,659,466
1886.....	3,600,452

PARIS, FRANCE, *September 21, 1888.*

J. L. RATHBONE,
Consul-General.

CURRANT WINE.

Currant wine, such as is referred to in my report, is not made in Greece, that is from the dried fruit, but wine is often made from the fresh fruit. It produces a very luscious and strong wine, rather too sweet, however, for the general taste. Currants are also often mixed with grapes during the crushing, especially when the grapes are poor, as it is considered that they give strength and sweetness which would otherwise be wanting. Currant-growers, however, on the whole find it more to their advantage to dispose of their crops in the dried form. — PATRAS, *September 20, 1888.*

E. HANCOCK

CONCLUSIONS ADOPTED BY THE BELGIAN LABOR COMMISSION.

In April, 1886, a royal commission on labor was constituted in Belgium to examine into the condition of labor and make such recommendations as it might deem expedient. The following are its conclusions as recently published in volume 3 of its report. The translation has been made in the Department by Mr. Charles M. Caughy:

[Session of October 29, 1886.]

1. That there should be organized by royal decree for one or more industrial establishments a committee of arbitration, whose duty it should be to adjust all differences between employer and employé.
2. That all requests for arbitration should be made by the interested parties to the burgomaster of the commune. Within eight days after its receipt the communal council should decide upon the request and transmit its decision to the Government.
3. That the communal council, when it deems that the exigencies of the occasion demand it, may itself take the initiative step. In cases of trouble or strikes the burgomaster may address himself directly to the Government invoking the assistance of the board of arbitration, under reservation 94 of the communal laws. In such a case the Government itself may take the initiative step.
4. That the board of arbitration should be composed of delegates selected in equal numbers from the ranks of both employers and employés; that in case the delegates can not agree in the selection of a president, the board should be presided over by a justice of the peace, his deputy, or, in case of necessity, by some one delegated by him.
5. That the regulations of the board should determine the number of delegates, according to circumstances and the importance of the factories interested. It should also determine the classification of the delegates.
6. That the employers' delegates should be appointed by the proprietors of the establishment interested, and selected from actual customers, or from the directors, engineers, or accountants of said establishment. The delegates of the employés should be appointed from Belgian working-men, not less than twenty-five years of age, and they must have actually worked at their trade four years at least in one of the interested factories. To be an employés' delegate requires the same conditions as to be an elector.
7. That the board, when organized, should make by-laws; it may be convened by the burgomaster or the governor, and at the request of one-half the members, and may meet at any time. The sittings should be held with closed doors.
8. That the deliberations of the board should be signed by the president and by each member, and stamped with the seal of the justice of the peace.
9. That the board may, at the request of all parties interested, take upon itself the responsibility of appointing an arbitrator.
10. That the delegates should be appointed for a term of two years.

REGULATIONS REGARDING LABOR.

1. That in everything that relates to the limitation of working hours for adults, this section deprecates any interference upon the part of the legislator, with this exception, that when hygienic reasons exist the law must and shall protect the health of the working-man.
2. That the commission is pronouncedly in favor of the complete and absolute interdiction of and young girls being allowed to work in the mines. As a temporary measure of fourteen years should be admitted to them.

4. That a day's work for a child between twelve and fifteen years of age must not exceed thirteen hours, out of which two hours, at least, must be allowed for rest.

5. That working at night by women in mines, factories, or yards is forbidden.

6. That burgomasters may give, on their own responsibility, a memorandum-book to the father, mother, or guardian of any child working in any mine or industrial establishment of any kind, on which shall be noted the name and Christian name of the child, together with the date and place of birth. That the foremen (*chefs d'industrie*) or the proprietors should, on their part, keep a register, upon which should be entered the same facts, together with the date of the child's connection with the establishment, as well as the time when such connection should be severed. It would also be well to have posted in some conspicuous place in each factory the requirements of the law, and the royal edict touching that particular industry, as well as the by-laws of the establishment itself, should any exist.

7. That the standing of the sanitary police of the factories, especially of those who have in charge dangerous or unhealthy establishments, should be improved, and that it is particularly necessary that the local hygienic commission, which is now out of existence, should be re-organized. The inspectors in the discharge of their duties should be accompanied by a workman in order to avoid the divulging of any of the secrets of the factory.

8. That the inspectors should be selected, as far as possible, from officials of the present existing administration. It should be in the power of the Government, nevertheless, to select persons for this duty who seem particularly fitted to perform its requirements.

9. The extent of the penalty that should be given by the law has not been discussed.

HOMES FOR WORKING PEOPLE.

[Session of November 13, 1886.]

1. That it is necessary that a scientific statistical report be drawn up on the dwelling-places of the working people.

2. That it is necessary to inspect in a thorough and effectual manner the habitations of the working people, especially those which serve as dwelling-places for several families. The communal regulations should prescribe, for the construction and reconstruction of these houses, every condition that is indispensable to both health and morality.

3. That it is necessary to revise the law of 1822 on personal contribution (taxes) concerning the total or partial exemptions established in favor of working people's homes.

4. That it is necessary to encourage the erection of this class of houses in the country as well as in the city, and especially to urge those charitably inclined to invest part of their capital in constructing such buildings as will meet all the demands of hygiene as well as morality.

5. That the benefits granted by articles 1, 2, 4, and 5 of the law of August 12, 1862, which derogates in favor of associations having for their object the erection of houses and other buildings for the use of the working classes, are applicable to all constructors of such buildings, and particularly to public administrations, such as charitable institutions, asylums, and communal administrations, who employ in the construction of these houses a sinking fund, whether it be part of their inheritance or borrowed capital.

6. That it is necessary—

First. To look favorably upon those societies whose aim is to rent, erect, and, above all, to sell houses to working people, and allow them to issue stock.

Second. To exempt from the land tax for fifteen years any house sold to a working-man.

Third. To see that the communal administration grant to all who devote their attention to the erection of such houses exemption from the municipal tax (*frais de voirie*).*

Fourth. To prohibit the imposition of a provincial or communal tax upon any such houses which are exempt from government tax. Any house, the value of which does not exceed 3,000 francs, should enjoy this advantage.

7. That societies having for their object the erection, purchase, sale, or rent of houses for the working people should be recognized as co-operative or limited corporations. The exemption from various duties granted in favor of co-operative societies by articles 1, 2, 3, and 4 of the law of July 2, 1875, also applies to limited corporations whose object is defined in article 1.

8. That it is necessary to exempt from execution (*droits de mutation*) any working-man who purchases a house of a less value than 3,000 francs from a building society or from any other public organization that is interested in that business, according to the conditions already defined.

9. That it is necessary to revise certain provisions of the civil code, in order to insure to the survivors of the husband the enjoyment of the house acquired during the married life of the deceased, and which, after his death, serves as the home of his heirs.

10. That it is necessary to revise articles 826, 827, 859, and 866 of the civil code ordering the division or the schedule of real estate and the sale thereof, when it is not divisible, there being in the entire inherited estate only one dwelling with appurtenances, the value of which does not exceed 3,000 francs.

11. That it is necessary in dividing the territory—

First. To reserve a portion of the land expropriated for the erection of houses for the working people.

Second. To erect upon the expropriated land a certain number of houses for the working people to replace the houses expropriated.

Third. To leave unoccupied by buildings a certain proportion of land, the amount to be determined by law.

PROFESSIONAL ASSOCIATIONS.

[Sessions of December 4 and 11, 1886.]

1. That each recognized professional union should be composed of citizens of Belgium, and that each union should contain only those of the same avocation. It may be composed of all employés, or of all employers, or of both, and should have for its object the education, the development, and the protection of their professional interests. The union may number among its members foreigners who have resided for at least two years in Belgium, on condition that their number shall never exceed one-tenth of the Belgian members, but they should never fill any executive position.

2. That the union should, in case of a dispute relative to labor, exert every effort for an equitable adjustment, if this will be permitted by the other party.

3. That its professional interests will concern exclusively: The board of arbitration; the labor exchange and all information on labor; the movements or the emigration of working people; assistance to those who are unemployed; the term of apprenticeship, technical education, library, expositions; questions relative to the conditions of labor, to the inspection and control of contracts, mines, factories, workshops, and the lodging-places of the working-man; to defend the working-man's interests in court of law; to secure aid in case of sickness, death or inability to work, either by organizing mutual aid societies or savings banks, or by direct appeal to the members, if the societies be in the same branch of the union; agricultural interests by inspecting and controlling all provisions, and purchasing all fertilizers and farming implements.

4. That a union organized on these principles should deposit a copy of its constitution and by-laws with the bureau of registry, which should be organized by the minister of agriculture and industry. This bureau will furnish a receipt thereof, which will guarantee the publication of the said constitution and by-laws within one month in a special issue of "Le Travailleur." At the time of its organization some distinguishing title

6. That each union should annually furnish to the bureau of registration notice of every change or modification that is relevant to the constitution of the council. The register of the members should designate the nationality of each one. This register should be at the disposal of the minister and of the committee appointed by the King's advocate. All changes in the constitution, the nominations for members of the council, and a statement of financial standing should be published in a special issue of "Le Moniteur."

7. That the courts can, at the request of those interested and by desire of the ministry, declare as incompetent all unions which shall be organized or shall act in violation of the provisions of this law, and shall pronounce all their actions null and void. In case of false representation in the annual statement the directors of such a union may be prosecuted by due process of law. Any union which does not comply with the requirements prescribed in article 6 by March 31 of each year, for the preceding year, should be subject to a penalty of 25 francs for each month's delay. When such neglect has existed for six months the entry should be reported as prescribed in article 4.

8. That any member has the right, notwithstanding any clause, to resign at any time from a union, and said union can only claim from him the assessment past due and the current one. If he has made any deposits in the savings banks, he has the right either to continue his membership therein, or to receive for such deposits an amount to be determined by the courts.

9. That in case any union should be disbanded the liquidation of the indebtedness must conform to the law of 1873 relative to commercial unions.

METHODS OF REDUCING ALCOHOLISM.

[Sessions of December 11 and 18, 1886.]

1. That the tax on malt liquors be reduced, and in order to compensate for the reduction a sum at least equal to it be added to the tax on alcohol.

2. That the price of the license to sell alcoholic beverages be increased.

3. That in order to decrease the number of drinking-houses the commune proposes:

First. To forbid the issuing of new licenses.

Second. To decree the suppression (in case of death, failure, or retirement from business) or existing licenses.

Third. In order to protect private interests the present holder of a license is authorized to surrender it to the wife and children of a deceased dealer, and to allow by process of law to the highest bidders the re-opening of a portion of the drinking-houses which have been closed during the year.

4. That certain interdictions be provided — hawking, plurality of commerce, and selling liquor to persons less than sixteen years of age.

5. That the time of closing be fixed by law.

6. That no suit for the recovery of drinking debts be tenable in law.

7. That the Government officials be intrusted with the inspection of drinking-houses.

8. That fines be imposed upon every one found under the influence of liquor in any public place, and also upon any drinking-house keeper who sells liquor to any person already intoxicated or to any minor under sixteen years of age.

9. That bond be required of all drinking-house keepers. This bond will serve as a guaranty for the payment of liquor taxes, as well as for the fines or damages which will accrue, either from the actions of the keeper of the house himself or from those of the persons who have become intoxicated in his house.

10. That the sale of alcoholic beverages on credit be prohibited.

11. That the Government should use every known means in its power to suppress intemperance. The Government, with this aim in view, particularly advises the formation of temperance societies.

TECHNICAL SCHOOLS.

[Session of February 5, 1887.]

1. It is necessary for the public good to encourage the establishment of technical schools, by adding to the curriculum of academies and industrial schools courses of art and applied science. This instruction should tend in a practical direction. Those private institutions which take the initiative for the creation of technical schools should be encouraged by the public authorities, particularly if they meet all the requirements of public inspection.

2. The cultivation of manual skill should be commenced in the primary school. The theoretical application of science to industry should be taught in the industrial school. The theoretical application of drawing and modeling to industry should be taught in the decorative art schools. Apprenticeship should be served in the workshops or in schools founded by the proprietors or syndicates, which should be closely connected with the workshops.

3. It should be the duty of the state to confine itself to the maintenance of harmony, and a grade between the different schools of technical education, and to encourage them by subsidies, respecting, as far as possible, the first step taken by the group who founded them.

4. The communes can greatly aid professional education by —

First. Introducing manual exercises in the primary schools.

Second. By establishing schools of modeling and design.

Third. By encouraging their progress by granting locations to the professional syndicates.

5. The state and the communes should place the schools under the following restrictions:

First. A minimum age for admission to an apprenticeship.

Second. The minimum education, to be determined by examination, that an applicant for apprenticeship must possess. This minimum should comprehend a thorough knowledge of reading, writing, and the four fundamental rules of arithmetic.

6. The Government should encourage the establishment of a more advanced curriculum for adults, in which should be included a theoretical education adequate to the requirements of those who would apply themselves to the higher mechanical arts.

7. The Government is requested to extend to children of working people who attend a technical school the privilege of the low tariff on the railroads as allowed to the working classes.

PAYMENT OF SALARIES.

[Session of November 27, 1886.]

1. That every contract for labor which stipulates either directly or indirectly a method of paying the salary which is other than in current money should be null and void. Every contract that has for its object the spending of the working-man's salary in a specific manner should be null and void.

2. That the payment of all or of any portion of a salary otherwise than in current money should be null and void. The working-man should by due process of law recover all or any part of his salary which had not been paid to him in current money.

3. That the action of any proprietor for the recovery of indebtedness for merchandise furnished to any working-man should not be tenable.

4. That any proprietor convicted of having used undue pressure to make a working-man purchase of, or prohibit him from purchasing of, any specific establishment should be amenable to the penalties prescribed in article 9 of the present law.

5. That if any foreman or fellow-workman in the mine, the factory, or the yard, or any contractor or subcontractor has sold goods to any workman in the same shop, factory, or yard, an action for the recovery of the indebtedness by the said foreman, fellow-workman, contractor or subcontractor should not be tenable.

>>> made in the salary.

8. That it should be forbidden for any proprietor to pay wages in any drinking-shop, store, or factory, or in any place connected with such establishments. Any person who should violate this order should be liable to the penalty provided by the present law.

9. That every person violating the present law should be subjected to a fine of from 100 to 500 francs for the first infraction, and for each repetition of the offense a fine of from 500 to 1,000 francs should be imposed.

10. That the present law should not affect either farm hands or house servants.

11. That it should be the duty of every proprietor to see that the present law shall be and must remain displayed in every factory, and particularly in the office where the wages are paid.

SAVINGS-BANKS.

[Session of November 27, 1886.]

1. That the commission of labor should by every means in its power insist that the directors of every corporation, proprietors and foremen of factories, the presidents of provident and mutual aid societies, the managers of charitable institutions (*patronages*) and other organizations which have for their object both the physical and moral advancement of the laboring classes should establish among these classes an agency which would encourage thrift, by receiving from them on every pay-day sums, no matter how small, which should be placed to their credit in the savings-bank. To accomplish this end the commission suggests the formation of soliciting committees, whose duties should be confined to a certain territory, a single canton for example.

2. That it would suggest to managers of provident savings-banks:

(a) To place at the disposal of the directors or presidents of these institutions account-books of the same style as those distributed by the national banks, with the exception that they bear no official signature nor number, and that they have a cover peculiar to themselves.

(b) To have printed on these account-books the lowest possible rate of interest, and to guarantee to credit once every year upon each book as presented the amount of interest that has accrued to the holder.

(c) To furnish to each society demanding it one of these books numbered, on which shall be entered *les sommes globales* of the different deposits upon the unnumbered books.

(d) To furnish a register upon which the directors shall enter the name and amount of deposit of every one interested in these savings-banks.

3. That the commission suggests to the Government and to the managers of the savings-banks that they establish either triennial or quinquennial conventions, to reward by classes the associations which are formed, with a view of protecting the savings of the working people.

MUTUAL AID SOCIETIES.

It is necessary—

First. To organize in every arrondissement one or more executive committees for the formation and development of mutual aid and provident societies, and comprehend in them all working people who are members of mutual aid societies, whether recognized or not.

Second. To request the communes to furnish a convenient location for the holding of meetings, as well as all necessary furniture.

Third. To encourage every publication which has for its object the development of the principles of friendship, economy, and temperance, particularly when the publication is in the shape of a tract.

Fourth. To make untransferable and to place beyond the reach of seizure the interests of every member in a mutual aid society.

Fifth. To modify as follows the third section of article 3 of the law of April 3, 1851: That the society shall be empowered to accept either as a donation or a legacy the furniture as well as the property used for its meetings according to the requirements of the form pre-

Sixth. To rescind article 8 of the law of April 3, 1851, which empowers the burgomaster or his deputy to assist at the sessions of recognized societies.

Seventh. To submit for the approval of the chambers the royal decree issued December 2, 1874, especially that portion which relates to the conditions required to approve the statutes, the forms and conditions of dissolution, and the methods of liquidating the affairs of a mutual aid society; to modify section 5 of article 6 of the law of 1851 so far as to give the members of the society at least a partial ownership in the property of the society.

Eighth. To ask the permanent commission to give the most vigilant attention to the statistics of the society, so as to place them by means of clear and precise investigation upon a scientific basis.

Ninth. To suggest that the Government give its attention to the best methods of enhancing the shares of the mutual aid societies in the savings-banks, and to persuade the givers and the communes to offer as prizes in the schools, savings-bank books to popularize the banks.

Tenth. To recommend in the most pleasing manner to the foremen (*chefs d'industrie*) their affiliation with the mutual aid societies by becoming enrolled as honorary members.

Eleventh. To exempt from the postal tax all printed matter of a legally-recognized society.

CONVENTIONS OF EXPERTS.

[Session of April 25, 1887.]

1. The commission expresses a great desire to see revised, articles 2, 3, 4, 8, 13, 29, 38, 41, 46, and 83 of the law of February 7, 1859, in reference to the conventions of experts, with a view of—

First. Authorizing the establishment of these conventions by royal decree.

Second. Rendering compulsory the registration of the business of all electors, whether they be working-men or proprietors, meeting under the conditions prescribed by article 6 of the law: Every person who shall be unduly registered, omitted, or erased from the register, should have the right of redress before the justice of the peace.

Third. Suppressing the fifth section of article 6, as well as article 7, which treats of the ability of the members to read and write, and the reunion of the privileged classes.

Fourth. Selecting from their own branch of the council the president and vice-president.

Fifth. Organizing conventions of experts for each permanent industry, to unite the lesser industries, and consequently reduce the large figure of sixteen members, or, much better, let the convention of experts be composed of a sufficient number of members to enable a subdivision of committees to be made representing the industries of like class. The royal decree can decide if elections shall be held by classes.

Sixth. Extending the jurisdiction of the convention of experts to affairs which relate to pensions and aid rendered by the provident savings-banks.

Seventh. Refusing the admission of more than one member of any firm as a delegate to the convention of experts.

Eighth. Abolishing the right of appeal from any of the decisions, no matter what may be the complexion of the convention.

Ninth. Simplifying as much as possible the forms and decreasing the expenses, so that the cost will be as small as possible for both proprietors and working people.

2. The foremen, or *porions*, will be electors as working people, but will be eligible only as proprietors.

3. It is requisite that the greatest publicity be given to all announcements relative to the election for members of the convention.

the vote be maintained.

articles

SCHOOLS OF DOMESTIC ECONOMY.

[Session of April 25, 1887.]

1. It is highly necessary that the state, the provinces, and the communes should each appropriate certain amounts for the establishment and maintenance of schools of domestic economy.

2. The Government will suggest to the communes the advisability of annexing to their communal or district schools a branch wherein domestic economy will be taught. In this case the branch should be equipped with a special corps of teachers.

3 and 4. (Special regulation of no general interest.)

HOMES FOR WORKING PEOPLE.

[Session of April 25, 1887.]

Conclusions modifying those already adopted at the session of November 13:

1. That it is necessary to prepare a scientific statistical statement of the homes of working people. The commission of labor expresses the hope that in the prosecution of this investigation the superior council of public health will be called upon to furnish the data, even approximately, as to the number of families in each house, and the separation of children from adults, as well as the separation of the sexes during the hours of sleep.

2. That it is necessary to give legislative recognition to the powers of the communal, to—

First. Issue prescribed regulations for the building of these houses in order that they shall possess those requirements so indispensable to both morality and health.

Second. Maintain, in the interests of sanitation, a continuous and effective inspection of these houses, especially of those which are occupied by several families. The hallways, yards, and stairways which lead to separately-rented apartments should be regarded by the police as public thoroughfares, and should be inspected accordingly.

3. That it is necessary, pending a more complete revision of the law of 1822, which relates to personal contribution, to modify the sections of that law which treat of the total or partial exemptions established in favor of houses of a greater rental value and excluding from the same benefits the homes of clerks and drinking-houses.

4. That it is necessary that public administrations should employ a portion of their capital in constructing comfortable dwelling-houses and rent them at such prices that after all expenses are paid, except the interest, the residue should be a fair return for the capital invested in the enterprise. The establishment of cabarets should be prohibited. To encourage the tenants to keep their apartments cleanly and in good order, it should be stipulated that the net proceeds of the rental, less, of course, the interest due upon the capital invested, should be divided annually among the occupants by crediting it against the next month's rent.

5. That it is necessary that the benefits granted by articles 1, 2, 4, and 5 of the law of August 12, which derogates in favor of societies that have for their object the erection of houses and other buildings intended for the working people according to their rights under the laws of registration and transcription, should be also applicable to every builder of such houses, and especially to public administrations, such as beneficial associations, asylums, and communal administrations, who employ in their construction a sinking fund, whether it be in the shape of a legacy or borrowed capital.

6. That it is necessary—

First. To encourage those associations which have for their exclusive object the construction, renting, and particularly the sale of this class of houses to working people, by authorizing them to issue their stock at a premium.

Second. To exempt from the land tax for fifteen years all newly-constructed houses, the cost of which, not including the land, does not exceed 1,600 francs. In the event of the sale of one of these dwellings, if the purchaser is possessed of no other real estate, and if the purchase money is to be paid as an annuity, the exemption from the land tax shall be granted.

Third. To prevail upon the communal administrations to exempt from the municipal tax (*frais de voirie*) all companies or societies who devote their capital to the erection of this class of houses.

Fourth. To forbid the provinces and communes to levy any tax upon houses which have been exempted from the land tax.

Fifth. Not to increase either the land tax or the provincial or communal taxes upon present existing buildings after they have been cleansed and improved, provided their value does not exceed 1,600 francs, land not included.

7. That societies having for their object the erection, purchase, sale, or rental of houses for the working people should be recognized as co-operative or limited corporations. The exemption from various duties granted in favor of co-operative societies by articles 1, 2, 3, and 4 of the law of July 2, 1875, also applies to limited corporations whose object is defined in article 1.

8. That it is necessary to exempt from execution (*droits de mutation*) any working-man who purchases a house of a less value than 1,600 francs, land not included.

9. That it is necessary to revise certain provisions of the civil code in order to insure to the survivors of the husband the enjoyment of the house acquired during the married life of the deceased, and which, after his death, serves as the home of his heirs.

10. That it is necessary to revise articles 826, 827, 859, and 869 of the civil code, ordering the division or the schedule of real estate and the sale thereof when it is not divisible, there being in the entire inherited estate only one dwelling with appurtenances, the value of which does not exceed 1,600 francs, the land not included.

INSURANCE AGAINST ACCIDENT.

[Session of May 20, 1887.]

1. In order to establish the insurance upon a scientific basis, it will be necessary to prepare a statistical account of the number of employés of each trade, and the average number of accidents in that particular branch.

2. It would be only just to compel every proprietor to announce, through a method yet to be determined upon, every accident sustained in his establishment.

3. That damages to be paid on account of an accident should be regulated in the most stringent manner by the law. The injured party should be at liberty to decide upon the mode of indemnity.

4. Every working-man should be insured.

5. The insurance should cover all risks incidental to his occupation.

6. The law should give its attention consecutively to the salaried workmen belonging to the different branches of manual labor.

7. The employés who may become insured should be those who receive an annual salary of not less than 2,500 francs; foremen are included under this rule.

8. The law should decide who shall be the persons to whom, in case of death, the insurance money should be given, as well as the proportion thereof that each one should receive.

9. The salary of the five previous years and the age of the injured man should be the ground upon which to base the amount of indemnity.

10. In order to assist the working-man in proving his claim, the law should make it obligatory upon the proprietor to keep a book in which the amount of wages paid to each man be entered.

11. An accident occurring through the gross carelessness of the injured party himself is

14. The premium will be sufficient to furnish the capital of the pensions granted.

15. The insurance company should be a syndicate formed from factories of the same or similar industry, and their operations should be controlled by the state.

16. The syndicates should be managed by a committee composed of proprietors and employés in equal numbers, with a president, who should belong to neither interest.

17. The insurer should guarantee the insured according to the amount of premium paid.

18. The labor commission requests the Government to submit the questions of right on the responsibility for accidents to the commission appointed to revise the civil code. It trusts that this commission will render a prompt report on the questions submitted to it.

MUTUAL AID, PROVIDENT, AND PENSION SOCIETIES IN THE INTEREST OF FACTORY EMPLOYÉS.

A. — Mutual aid societies.

[Sessions of May 28 and June 4, 1887.]

1. Each proprietor of any work, whether it be permanent or of a temporary duration of three months at least, who is bound by the law to see that his employés are insured or is connected in any manner with the communal provident societies in favor of minor working-men, should provide:

For the wounded.—(a) Means to summon immediately to their aid both surgical and medical assistance (in this medicine is included). (b) Means by which they may be afforded both pecuniary and sanitary aid.

For the sick.—(a) Means to provide medical attention not only for the working-man himself, but also for any of his family who reside in the same house. A working-man whose sickness has been brought about by his own imprudence, or by continual intemperance, may be deprived of this assistance. (b) Means by which to allow to the sick working-man, as a direct result of his labors in the factory, all indispensable assistance of a pecuniary or medicinal nature.

2. The proprietor should have recourse to every available means for assuring himself of the responsibility of this organization.

3. Those particular mutual aid societies which are supported or created by reason of article 1 should be maintained by a rebate on the wages, by contributions of the proprietors by subsidies and various bequests, as well as by the result of the fines incurred for infractions of any regulation of the establishment or workshop. At all events, the contributions of the proprietors should be ample to defray all the medical and surgical expenses (including the medicine) of the injured working people.

4. These societies may be especially intended for the injured and sick, or they may be thrown open to all classes. They may also be open to several industries carried on in the same or neighboring localities.

5. Any working-man interested in any mutual aid society may, if he so desire it, be exempted from contributing to that particular society. In such an event he should not be entitled to any of the benefits of the institution except the right to free surgical attendance.

6. The administration of these societies should be intrusted to the delegates of the working-men; the method of electing whom, and all requirements for eligibility, should be determined by the statutes. Among those requirements should be that for a certain number of years (to be determined hereafter) the applicant has been in the continuous employ of the same proprietor or in the same workshop. The proprietor may have himself represented in the executive board and demand of it the presidency, with the right to vote. In every new establishment the executive board may be selected by the proprietor for the first three meetings.

The length of time which each individual mutual aid society is obliged to contribute to

8. Every possible notoriety should be given as regards the financial standing of any society, particularly by sending to each working-man a tabulated statement of the proceedings of the previous meeting.

9. Individual mutual aid societies should be recognized under conditions to be determined by law. These should prescribe the method of liquidation for the recognized as well as for the unrecognized societies.

10. The Government may compel those industrial institutions who receive any support from the state to establish recognized mutual aid societies.

B.—Provident society for miners.

1. The provident societies for miners should be maintained; but they should be released from all past or present affiliation with pensions for old age.

2. The rates of other pensions should be made to harmonize with those of insurance against accident while at work.

3. The working-men should contribute to the support of the society.

4. When an establishment has made for its pensioners a sum larger than the amount of rebate held back from the wages and the subsidy, then it should pay 50 per cent. of the excess into a fund to be known as the extraordinary subsidy.

5. The amount of the payments should depend entirely upon the class in which the various mining associations have been graded.

6. Provident societies should be permitted to receive support both from the Government and the province.

7. Each society should be managed by a commission, to be composed of proprietors and employes, in equal numbers, and presided over by an official of the state.

8. Each society should have a clause in its constitution which would permit any working-man to transfer his membership to any other society.

9. The commission is satisfied that the following clauses should by all means be adopted:

(a) That a working-man should be permitted by the commission to be represented before it by a physician of his own choice.

(b) That he should have the right of appeal to the convention of experts.

(c) That there should be compulsory affiliation between all miners and mining associations.

(d) That the term of existence of any society should be unlimited.

(e) That the decisions of the commission upon all matters appertaining to pensions should be so clearly and distinctly set forth that in case of the rejection of his claim the working-man can readily advise himself of the reasons thereof.

(f) That the greatest publicity should be given to the financial standing of every society.

C.—Pension societies.

1. All working-men belonging to permanent organizations which derive assistance from the state should be affiliated by name with the general pension society, or with some analogous institution which has been specially organized in their interest. They should be given credit in the pension rates for a risk against accidental death.

2. As a result of this affiliation the proprietor would pay over to the credit of the working-man a certain number of centimes to be determined by the amount of work done daily. To this payment may be added an interest in the subsidies of the state, and the allowance made by the province. A portion of this payment should be made with regard to the capital at the death of the person insured.

3. The age at which a working-man shall be entitled to a pension should be decided by

5. The attention of the Government is called to the article submitted by Canon Henry relative to the most practical means of improving and popularizing the pension societies.

CO-OPERATIVE SOCIETIES.

[Session of June 4, 1887.]

1. The law of May 18, 1873, section 6, relating to co-operative societies, is sufficient.

2. The law of June 20, 1867, which, in article 1, authorizes the Government to confer all the rights of a limited society upon societies which have for their object the erection, purchase, sale, or rental of houses intended for working people should be completed. It accorded to such societies as requested it, the rights and benefits granted to co-operative societies by the laws of May 18, 1873, and July 2, 1875.

3. It is necessary that the attention of the legislators and the Government be called to the great service that has been rendered to agricultural credit by the establishment and encouragement given to societies which are conducted in the interest of the farming element.

4. The commission particularly recommends co-operative societies of consumption, of popular credit, and those for the construction of houses for working people. It indorses those consumers' co-operative societies which deal with the merchants and the trades-people in their own vicinity. It expresses the desire that there will be organized a permanent commission of the co-operative societies similar to those established by the mutual aid societies, the aim of which will be to direct the members and keep together the statistical accounts.

5. In manufacturing establishments where the working people have organized from among themselves a consumers' co-operative association the proprietors should be empowered to withhold from the wages of any working-man the amount that he is indebted to the said association.

6. By an extension of the provisions contained in articles 85 and 86 of the law of May 18, 1873, co-operative societies should be permitted to amalgamate so as to form another independent co-operative society from all the societies which, notwithstanding, shall preserve their juridical individuality.

7. The co-operative societies which have for their object the purchase of raw material, provisions, and tools intended for the consumption or use of their members may be organized under the form prescribed by the law of 1873, but even then their transactions should not be regarded as commercial, according to the terms of articles 2 and 3 of the commercial code.

EXPORTS FROM MOROCCO TO THE UNITED STATES.

Articles.	Quarter ending —				Total for the year.
	September 30, 1887.	December 31, 1887.	March 31, 1888.	June 30, 1888.	
Almonds		\$918. 37			\$918. 37
Carpets and curios.....		75. 20	\$131. 00		206. 20
Cushions			2. 40		2. 40
Dates			8. 00		8. 00
Hides		84. 00			84. 00
Skins, goat.....	\$7,394. 50	32,076. 87	23,279. 00	\$48,995. 89	111,746. 26
Skins, sheep.....		673. 66			673. 66
Wool, greasy.....	261. 00	95. 00			356. 00
Wool, washed		38. 89			38. 89
Walnuts.....		241. 02			241. 02
Total.....	7,655. 50	34,203. 01	23,420. 40	48,995. 89	114,274. 80

PORTO RICO.

Consul Conroy (San Juan, Porto Rico,) reports that "financially the island continued during 1887 in the same embarrassed position, and no alteration has taken place in the existing currency—the Mexican silver dollar. The project for exchanging it for Spanish colonial coin is still pending. Exchange has ruled about the same as last year; bills on the United States were at 20 to 28 per cent. premium, and on London \$5.70 to \$6. A bank is to be established here, with the sanction of the Government, having the privilege of issuing paper money. The concession for constructing a railroad around the island has been granted to a party in Barcelona, Spain, who has formed a company with French capital and sent several engineers to make the surveys. The road may be completed in several years."

The exports from Porto Rico to the United States during the year ending June 30, 1888, were as follows:

Statement showing the trade between the Island of Porto Rico and the United States for the fiscal year ending June 30, 1888.

	Value.
Exports.....	\$3,693,495.52
Sugar.....	86,742.48
Coffee.....	651,037.89
Molasses.....	68,150.62
Tobacco.....	1,827.48
Wood.....	20,212.25
Hides.....	554.72
Rum.....	27,885.10
Cocoa-nuts.....	4,769.76
Annotto.....	26,250.00
Coarse salt.....	2,294.10
Tallow.....	20,653.87
Oranges.....	5,625.60
Pine-apples.....	1,245.75
Raw cotton.....	295.23
Ginger.....	4,611,040.37
Total.....	

Exports from Aguadilla (Porto Rico) to the United States.

Years.	Sugar.	Coffee.	Tobacco.	Molasses.
	Quintals.	Quintals.	Quintals.	
1880.....	90,083	38,400	10,232	78,500
1881.....	57,552	68,000	6,231	15,960
1882.....	86,722	34,400	5,665	35,786
	110,279	52,800	9,315	26,290
		31,200	3,445	67,395
				12,646

INDUSTRIES AND NAVIGATION OF NANTES.

SHIP-BUILDING.—*Vessels launched during the year.*

Name.	Character.	Tonnage.	Horse-power.	Remarks.
<i>The Buffalo</i>	Iron screw	333	600	For the French Government.
Twelve iron	Torpedoes.....	900	6,300	Do.
<i>The Hurricane</i>	Iron screw.....	160	1,600	Do.
Side-wheel	Iron ferry-boat	158	180	For the Company of the Basse Loire.
Steamer	Iron screw.....	60	70	Do.
Steam-dredge.....	Wood	148	25	Private account.
Steamer	Iron screw.....	140	150	French colonies.
<i>The Fanny</i>	Three-masts, wood.....	400	.....	Private account.
Twenty small vessels.....	Wood and iron.....	885	.....	Do.

This table shows an increase of 794 tons over the preceding year 1886; but this increase is mainly owing to the construction of canal boats for the canal maritime, now in process of construction, from the port of St. Nazaire to the city of Nantes.

To quote from the report of the Company Chantiers de la Loire:

The condition of the ship-building industry of the Loire Inférieure, as regards this company in particular, may be characterized in the following manner—the usual activity in the construction of vessels of war, but absolutely no orders for vessels of commerce. During the year 1887 the company delivered the following ships, begun in the dock-yard the preceding year, viz: The *Drome*, transport of the third class, for the French Government; the *Buffalo*, tug, for the same; the *Constantia*, tug, for Roumania; the *Hurricane*, torpedo, constructed on a plan suggested by the company and sent to Toulon to be tested. They also delivered 12 torpedo boats, 35 meters in length, a dredge, iron barges for the colonies, lighted buoys for the Suez Canal, etc. Work was continued on the cruisers *Tage*, for the French Government, and the *Admiral Kornelov*, for Russia. An order has been received for an iron-clad cruiser for Greece, and from the Company Chargeurs Réunies, of Havre, for a passenger and freight steamer. This is the only commercial vessel ordered in France during the year.

Vessels belonging to the ports of the Loire, January 1, 1888.

Tonnage.	Port of Nantes.		Port of St. Nazaire.	
	Number.	Tonnage.	Number.	Tonnage.
800 tons and over	7	7,194	9	17,644
From 700 to 800 tons				
From 600 to 700 tons	6	3,913	1	609
From 500 to 600 tons	5	2,710	5	2,803
From 400 to 500 tons	15	6,885	6	2,487
From 300 to 400 tons	27	9,540	6	2,123
From 200 to 300 tons	38	9,228	1	216
From 100 to 200 tons	89	12,658	1	101
Under 100 tons.....	158	6,435	69	1,949
	345	58,563	98	27,932
From St. Nazaire	98	27,932		
Tota. both ports				

The preceding table shows a decrease of 27 vessels, 8,527 tons, as compared with the year 1886. This decrease is entirely at the port of Nantes.

Government works.

Eight miles below the city of Nantes, on a small island three-fourths of a mile in length and one-fifth in width, on the south side of the river Loire, are constructed the extensive machine shops and foundry of the French Government. The buildings cover the greater part of the island and are admirably adapted for the purposes for which they were constructed. The arrangements for light and ventilation are excellent. Engines and machinery for the navy are constructed at these works. Eleven hundred men are employed, are cared for during illness, and, after twenty-five years service, receive a pension of 600 francs per annum. The wages paid per day are as follows: Ordinary workmen, new hands, 3 francs (60 cents); old hands, 4 francs (80 cents); skilled workmen, 5 to 5.50 francs (\$1 to \$1.10).

IRON WORKS OF THE BASSE INDRE.

The products treated during the year amounted to 7,783 tons, against 7,401 in 1886, an increase of 382 tons; average number of workmen employed, 450.

The foundry at Coueron produced during the year in raw products 19,561,732 kilograms, against 16,187,077 in 1886, as follows, viz:

	Kilograms.
Lead ore, treated.....	9,126,811
Lead ore, refined and unsolved.....	8,765,856
Copper ingots.....	1,129,020
Zinc, refined.....	530,045

In refined products, during the year, 18,566,330 kilograms, against 17,131,851 kilograms in 1886, as follows, viz:

	Kilograms.		Kilograms.
Pig-lead	12,024,076	Sheet copper.....	918,864
Silver ingots.....	19,348	Copper wire.....	37,338
Red-lead.....	381,792	Copper bars.....	72,176
White-lead.....	71,412	Sheet brass.....	1,024,831
Shot	939,960	Brass wire.....	307,786
Lead pipe.....	1,378,154	Brass bars.....	118,099
Sheet lead.....	1,269,418	Sheet zinc.....	3,076

Number of workmen employed during the year, 580.

MANUFACTURES OF WOOL AND COTTON.

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MANUFACTURES OF OILS AND SOAP.

The oil factory of Chantenay has used in the manufacture of oils the following quantity of oleaginous articles employed for this purpose:

	Kilograms.
Cocoa-nut.....	1,200,000
Sesame.....	460,000
Arachides (pea-nuts).....	550,000

The oil produced is mainly used in the manufacture of soaps. Quantity produced during the year:

	Kilograms.
Castile soap.....	2,400,000
Other soaps.....	1,100,000

Oil cake has had an active sale during the year at advanced prices.

CONSERVES ALIMENTAIRES.

The yield of vegetables for canning has in general been good as regards quantity, except the crop of peas, which was injured by drought at the moment when the growth was the most active. The sardine fishing on the coast of Morbihan and Finistère has been more prosperous than for many previous years. Never before on these coasts has such an abundance of this fish been seen. The fishing season, favored by summer weather, continued all the month of October without a day's interruption. During this time the quantity caught was equal to the five previous months. On the coasts of La Vendée, the Loire Inférieure, and all those places where dredging was necessary, very few shoals of sardines were seen. The result for the year 1887 was satisfactory to the manufacturers as well as the fishermen.

SALT.

The yield of salt from the marshes on the coast for the year 1887 amounted to 60,384,680 kilograms. Although this is double the quantity produced in 1886, it is but a low figure compared with the year 1884, when the yield was 113,000,000 kilograms.

CORDAGES OF HEMP, MANILA, IRON, ETC.

This industry has received some encouragement during the year from the ship-yards of Nantes and St. Nazaire and from the colonies.

	Kilograms.
Ropes of tarred hemp.....	400,000
Ropes of hemp, not tarred.....	20,000
Ropes of galvanized iron.....	70,000
Ropes of galvanized steel.....	10,000
Copper lightning-rods.....	1,500
Ropes of cotton-cocoa, etc.....	

INDUSTRIES AND NAVIGATION OF NANTES.

NAVIGATION.

Arrivals and departures of vessels of all nations from the ports of the Loire in 1887.

Arrivals.	Number.	Tonnage.	Departures.	Number.	Tonnage.
Loaded.....	2,426	748,787	Loaded	1,767	313,835
In ballast.....	456	52,536	In ballast.....	1,078	415,965
Total	2,882	801,323	Total.....	2,845	729,800

The following is a statement of the commerce of the ports of the Loire with foreign countries—both arrivals and departures loaded:

Nantes, Paimbœuf, and St. Nazaire.	French vessels.		Foreign vessels.	
	Vessels.	Tonnage.	Vessels.	Tonnage.
Arrivals:				
From the French colonies	67	32,486	21	9,304
Countries outside of Europe.....	35	67,151	37	36,863
Countries of Europe	356	152,358	545	289,328
From cod-fish fisheries	4	294		
Total	462	252,289	603	335,495
Departures:				
To French colonies.....	56	22,478	2	732
Countries outside of Europe	41	68,954	2	867
Countries of Europe.....	199	55,682	152	52,355
Total	296	147,114	156	53,954

Commerce of the ports of the Loire for the past three years.

Ports.	Years.	French vessels.		Foreign vessels.		Total.	
		Vessels.	Tonnage.	Vessels.	Tonnage.	Vessels.	Tonnage.
Arrivals:							
Nantes	1887	462	252,289	603	335,495	1,065	587,784
St. Nazaire	1886	510	206,092	673	350,008	1,083	618,100
Paimbœuf.....	1885	589	280,766	723	373,747	1,312	654,483
Departures:							
Nantes	1887	302	147,114	156	53,954	458	201,068
St. Nazaire	1886	312	150,044	192	58,396	504	208,440
Paimbœuf.....	1885	348	117,926	213	61,615	461	179,541

From these tables it will be seen that among the arrivals the French flag has suffered a diminution of 16,000 tons, which bears mainly upon the commerce with the countries of Europe. The trade with the French colonies has increased about 7,000 tons. Foreign flags have lost among the arrivals entirely by the decrease of the commerce with the

Navigation between the ports of the Loire and the French colonies.

Ports.	French vessels.		Foreign vessels.	
	Number.	Tonnage.	Number.	Tonnage.
Arrivals:				
From Réunion.....	9	3,736	1	417
From Guiana.....	1	367		
From Martinique.....	16	8,334	4	1,213
From Guadeloupe.....	21	6,750	11	4,081
From Mayotte.....	4	1,866	3	2,555
From Algeria.....	16	11,433	2	1,038
Total.....	67	32,486	21	9,304
Arrivals in ballast.....	1	432		
Total.....	68	32,918	21	9,304
Departures:				
To Réunion.....	9	4,314		
To Guiana.....	15	6,811		
To Martinique.....	10	3,033		
To Guadeloupe.....	16	4,516	1	235
To Mayotte.....	2	845		
To Algeria.....	1	858	1	497
To Senegal.....	1	486		
To Gaboon.....	1	591		
To New Caledonia.....	1	1,024		
Total.....	56	22,478	2	732
Departures in ballast.....	6	2,621		
Total.....	62	25,099	2	732

Arrivals, loaded, from the countries outside of Europe, exclusive of the colonies.

From—	French ships.		Foreign vessels.		
	Number.	Tonnage.	Nationality.	Number.	Tonnage.
Egypt.....			England.....	1	888
British India.....			do.....	3	3,582
Holland.....			Norway.....	1	811
			Germany.....	2	1,623
			Sweden.....	1	516
The Oceanic Isles.....			Denmark.....	1	190
			Germany.....	1	288
British possessions in N. A.....			Norway.....	2	898
United States.....	1	1,977	England.....	14	19,734
			Greece.....	1	595
			Germany.....	1	1,281
St. Thomas.....	8	2,467	Norway.....	1	605
			England.....	4	4,064
			Norway.....	1	199
Brazil.....			England.....	1	908
			Italy.....	1	411
			Norway.....	1	270
Argentine Republic.....			Transatlantic steamers..		
Vera Cruz.....	12	26,274	do.....		
Colon.....	13	34,678			
Total.....	35	67,151			
Foreign vessels.....	37	36,863			

Compared with the preceding year, there is a marked improvement in the trade with the French colonies. The importations (sugar, coffee, cocoa, rice, etc.) show an increase of 7,000 tons in French ships and 5,000 tons in foreign vessels. This increase is mainly from Algeria and Martinique. On the other hand there is a decrease of 3,000 tons in the imports from Réunion.

Forty French vessels of 61,051 tons arrived in 1886, and forty foreign vessels of 33,584 tons. This shows a decrease in the number of vessels and an increase in tonnage, which increase is owing entirely to the establishment of regular lines of large transatlantic steamers to Vera Cruz and Colon.

Navigation of the ports of the Loire with the ports of Europe in 1887.

Countries.	French vessels.		Foreign vessels.	
	Number.	Tonnage.	Number.	Tonnage.
Arrivals of vessels loaded coming from—	270	129,776	359	241,283
England	5	980	20	8,653
Belgium	3	1,816	46	19,316
Sweden	2	414	28	7,734
Norway	2	486	14	6,734
Russia.....	1	107	34	12,090
Northern Germany.....			1	244
Denmark	55	14,738	23	11,783
Spain.....	12	2,591	4	352
Portugal	4	768	7	3,149
Italy.....			2	654
Austria	2	682	7	3,336
Turkey	356	152,358	545	289,328
Total.....	17	6,634	4	1,018
Arrivals in ballast	373	158,992	549	290,346
Total arrivals				
Departures of vessels loaded going to—	159	47,104	100	31,451
England	8	1,554	28	10,921
Belgium	4	707		
Northern Germany.....	1	191	3	865
Denmark	21	4,995	17	7,607
Spain.....	2	165		
Portugal	2	331	1	389
Italy.....	2	635	3	1,122
Turkey	199	55,682	152	52,355
Total	201	118,712	459	280,251
Departures in ballast	400	174,394	611	332,606
Total departures				
Arrivals in 1886	406	181,078	602	312,019
Departures in 1886	219	69,110	181	53,933
1887 shows a decrease of English ships			49	15,006
1887 shows an increase in Spanish ships.....				6,000

Arrivals and departures from the ports of the Loire to other ports in France during the past five years.

Years.	Arrivals.				Departures.				Total.	
	Vessels loaded.		Vessels in ballast.		Vessels loaded.		Vessels in ballast.			
	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.
1887.....	1,361	161,003	434	44,452	1,315	112,767	404	39,782	3,514	358,004
1886.....	1,293	145,803	347	42,757	1,211	135,755	457	33,045	3,308	357,360
1885.....	1,349	118,809	361	31,813	1,233	100,399	525	34,203	3,448	265,224
1884.....	1,268	115,839	346	32,402	1,197	109,954	472	28,017	3,284	286,202
1883.....	1,270	98,695	378	37,801	1,227	95,448	467	34,887	3,342	266,831

The following items have been selected as most interesting to our business community, from the long list of imports and exports from the ports of the Loire in 1886 and 1887:

Imports in 1886 and 1887.

Articles.	1886.	1887.	From what countries.
	<i>Kilograms.</i>	<i>Kilograms.</i>	
Raw sugar.....	29,434,673	32,696,428	From the French colonies.
Cheese	307,757	273,486	Switzerland, Italy, Holland.
Raw hides.....	96,613	112,300	Cochin-China, New Grenada, Chili.
Wheat	35,944,775	51,486,763	United States, British India.
Rice	5,639,012	2,765,416	India, Italy.
Oleaginous grains and nuts ...	7,713,917	2,320,456	India, Africa, Senegal.
Tobacco.....	752,205	352,064	Algeria and Cuba.
Lard	289,557	5,543,310	England, Spain, Mexico.
Wood (buildings).....	54,938,204	36,035,935	Russia, Sweden, Norway, Germany, United States, Canada.
Porcelain clay	3,851,014	4,017,958	England.
Tar and pitch	11,734,478	8,120,665	England, Russia, Belgium, United States.
Iron ore	37,338,023	14,054,700	Spain, Algeria, South America.
Copper ore	924,380	1,107,325	England, Hayti, South America.
Lead ore	10,965,067	8,578,207	England, Belgium, Spain, Italy.
Coal	580,299,566	554,374,236	England.
Petroleum	303,697	201,649	England, United States.
Starch	471,875	583,862	England, Germany, Belgium.

A treaty of commerce with France and direct communication with Nantes would open the market to the United States for the above articles, except coal and sugar.

Exports.

Articles.	1886.	1887.	To which countries.
	<i>Kilograms.</i>	<i>Kilograms.</i>	
Eggs, poultry, and game	3,421,187	5,832,177	French colonies, Mexico, England, S. America.
Cheese	96,327	78,449	Do.
Lard	145,963	120,705	French colonies, Mexico, Venezuela.
Salted butter.....	956,533	2,614,311	French colonies, England, Mexico, S. America, Canada.
Cereals and flour.....	12,447,967	11,536,672	French colonies, England, Norway, Holland.
Rice	306,716	570,154	French colonies, England, Norway, Mexico.
Potatoes			

Receipts at the custom-house at Nantes.

From.	1886.	1887.
	<i>France.</i>	<i>Francs.</i>
Duty on imports.....	17,062,380	19,244,550
Tax on navigation.....	372,265	358,079
Tax Statistique.....	208,585	211,428
Accessories.....	50,277	64,439
Tax on salt.....	3,684,424	3,674,839
Total.....	21,377,961	23,553,336

Exports from the consular district for the years ending December 31, 1885, 1886, and 1887.

1885.....	\$209,598
1886.....	253,557
1887.....	407,356

This is a very great increase in exports over previous years, for while the trade of Nantes for the past fifteen years has annually declined, that of the agencies has largely increased. The shipments from L'Orient in 1887 amounted to \$197,043, and a large proportion of the remainder was from the Angers district, thus leaving not much more than one-fourth for the actual shipments from Nantes.

AGRICULTURE.

The depressed state of agriculture, which has prevailed since 1883, is yearly growing more intense. Farmers attribute this chiefly to foreign competition, and complain that the Government makes contracts abroad for the army and navy. By continued pressure upon the Government the agricultural interest succeeded in increasing the duties on corn, cattle, and meat, but farmers still protest that this protection is not sufficient. In 1885 the duty on cereals was advanced to about 6½ francs per quarter, and later to 11½ francs. Notwithstanding these increased duties, it will be seen by the accompanying tables that the prices of cereals and cattle have very materially fallen since 1885. The prices of live stock are 30 per cent., and in some localities 50 per cent., less than those of a few years since. The price of meat, however, to consumers has not fallen in proportion. French political economists have pointed out the baneful effect of the constant subdivision of land, which gradually creates a numerous class of small peasant proprietors, who are not in a position from want of capital to bring machinery into application, to purchase the manure requisite for their cultivation, or even to supply themselves with the best modern agricultural implements. This, together with the want of instruction in the art of agriculture, may account for the small amount of manure extracted from the soil, averaging from 18 to 24 hard-working,

gations. The area of farms in this district varies from 25 to 150 acres, but small farms are the most numerous and the subdivision of the land is steadily increasing.

Farm laborers are paid from \$70 to \$90 per annum, with board and lodging; the working hours are fifteen, with three intervals for meals. Day laborers are paid about 40 cents per day. The productions consist of cereals, hemp, flax, colza, and other seeds.

Average price of cereals per hectoliter at Nantes for the years 1884, 1885, 1886, and 1887.*

Articles.	1884.	1885.	1886.	1887.
	<i>Francs.</i>	<i>Francs.</i>	<i>Francs.</i>	<i>Francs.</i>
Wheat.....	22.70	22.30	21.67	18.15
Rye.....	14.52	14.14	14.08	13.68
Barley.....	13.53	13.24	13.24	12.95
Buckwheat.....	11.97	11.94	12.11	11.86
Oats.....	11.24	10.95	10.93	10.63

* 1 hectoliter is = 2.75 bushels.

Table showing the number of cattle slaughtered at Nantes.

Animals.	1884.		1885.		1886.		1887.	
	No.	Francs.	No.	Francs.	No.	Francs.	No.	Francs.
Bullocks.....	3,585	507.50	3,258	489.00	2,232	437.50	1,854	389.50
Cows.....	1,199	367.25	845	369.75	485	359.25	609	305.25
Calves.....	28,852	67.50	27,207	67.75	24,072	61.00	24,228	49.75
Sheep.....	31,355	47.75	28,951	41.50	27,042	39.25	24,507	37.25

This table, though official, contains only the number of animals slaughtered in Nantes, as in order to avoid the tax at the slaughter-house many animals are now killed and dressed outside of the city.

While the commerce of Nantes has annually declined St. Nazaire has grown in wealth and importance. To afford accommodations for the increasing trade, a few years since a capacious dock was completed, nearly one mile in circumference, at a cost of 17,000,000 francs, and two years ago the railway was opened to Chateaubriant, affording direct communication with Paris, and not via Nantes, as heretofore.

Large store-houses have also been constructed, and the facilities for unloading cargoes of coal, wheat, etc., are admirable. Steamers of 1,000 or 1,200 tons capacity arrive with coal from England, discharge their cargoes, and depart in a few hours. Of the large number of arrivals and departures at the ports of the Loire reported in the foregoing tables not more than one-tenth come up to the city of Nantes.

L'Orient may be considered the center of the sardine fishing district, and owing to the activity of their merchants business has grown extensively at the expense of Nantes. The exports in 1885 amounted to 400,000 against

The business of the Angers district, which includes Saumur, St. Hilaire, Amboise, Le Mans, etc., has greatly increased within the past few years, and since the closing of the agency at Angers the invoices are verified by the consul at Nantes and credited as exports from the city of Nantes.

The attention of our manufacturers has frequently been called to the importance of the trade with this consular district, but no effort has been made on their part to secure it. With a very few exceptions American products are unknown. Carolina rice, petroleum from Pennsylvania, and lard, are advertised and largely sold, but are all purchased in Paris or Havre, thus greatly increasing the price to the purchaser.—NANTES, *September 20, 1888.*

H. A. SHACKELFORD,

Consul.

THE COMMERCE OF BELGIUM.

From official statistics, just issued, I am enabled to submit the following short report upon the commercial movement of Belgium with foreign countries, and the United States in particular, during the first six months of the present year, as compared with the same period of 1887.

In the importations from all countries there was an increase of 7 per cent. over the same period of the preceding year, and in the exportations for the same time there was no material change.

The following table shows the principal differences in value and the increase and decrease in the importations for the six months of 1888, as compared with the same period of 1887:

<i>Increase in importations.</i>			
	Francs.		Francs.
Cattle	2,387,000	Petroleum	2,561,000
Horses and foals	1,023,000	Potatoes	2,745,000
Barley and malt.....	4,484,000	Oil-seed	10,842,000
Butter, fresh and salted.....	3,150,000	Ore, iron.....	1,444,000
Soda	11,845,000	Resin and bitumen	3,388,000
Flax, raw	3,444,000	Rice	2,452,000
Flour, meal, and bran	3,825,000	Thread of flax and other vege-	
Hides, raw	2,543,000	table fiber	737,000
Iron, cast.....	2,548,000	Wheat.....	7,126,000
Lead, unworked	799,000	Wine.....	756,000
Oats, Indian corn, and buck-		Wood, building	627,000
wheat	8,158,000	Woolen tissues, light.....	736,000
Peas, lentils, and beans.....	1,009,000		

Decrease in importations.

Francs.	Francs.
743,000	Oils, vegetable, not alimentary.. 1,933,000
	1,361,000

The following table shows the principal differences in value and the increase and decrease in the exportations for the six months of 1888, as compared with the same period of the preceding year:

Increase in exportations.

	Francs.		Francs.
Barley and malt.....	938,000	Oats, Indian corn, and buck-	
Soda	1,043,000	wheat	2,928,000
Other chemical products.....	1,916,000	Oil-seed.....	788,000
Flour, bran, and meal.....	4,404,000	Rags and shoddy.....	632,000
Grease.....	1,648,000	Railway and horse cars, not of	
Hides, raw	9,385,000	wood	3,535,000
Mercery and hardware	839,000	Sugar, refined.....	1,023,000
Lead, unworked.....	886,000	Wool	1,243,000
Steel, worked.....	761,000	Woolen tissues.....	1,228,000
Oils, vegetable alimentary.....	1,037,000	Woolen yarn.....	720,000

Decrease in exportations.

	Francs.		Francs.
Cows	4,255,000	Zinc not worked.....	2,393,000
Oxen.....	1,318,000	Rye	1,752,000
Horses and foals.....	986,000	Silk, raw.....	882,000
Chicory	755,000	Stones, crude and worked.....	1,610,000
Coal	2,947,000	Sugar, raw	7,308,000
Flax	1,746,000	Thread of flax, and other vege-	
Machines of metal.....	7,251,000	table fibre.....	2,077,000
Meat	2,591,000	Tissues of flax, hemp, and jute..	1,406,000
Copper and nickel, crude	636,000	Tow and oakum.....	1,036,000
Iron in bars and sheets.....	1,417,000		

IMPORTATIONS TO THE UNITED STATES.

In the importations the United States were interested as follows:

Copper and nickel.—The total importations from all countries during the first six months of 1888 aggregated 2,011 tons, against 2,979 tons during the corresponding period of 1887, being a decrease of 968 tons, or 32 per cent.; 292 tons, or about 15 per cent. of the total imports of this article, came from the United States in 1888, while during the first half year of 1887 little more than one ton was received from there.

Cotton.—Cotton was imported to the amount of 12,776 tons during the first six months of 1888, against 13,947 tons in the corresponding months of 1887—a slight decrease for 1888. The statistics do not give the quantities received from the different countries.

Flour and meal.—The total receipts from all countries amounted to 31,970 tons during the first half year of 1888, against 24,337 for the corresponding period of 1887, showing an increase of 7,633 tons, or 34 per cent. In the receipts of this merchandise from the United States there has been, however, a marked decrease, from 6,450 tons in 1887 to 4,264 tons in 1888, a difference of 2,186 tons, or 35 per cent.

Dried fruits.—In this article there has been an increase of 48,000 francs

United States, whence came, during the six months of 1888, imports to the value of 98,500 francs, against 29,000 francs in the corresponding period of 1887. The imports of this article from Holland and Italy have fallen off.

Grease. — The total imports during the six months of 1888 amounted to 15,060 tons, an increase over the same period of 1887 of 511 tons. Of the amount, the United States furnished 7,185 tons, an increase of 803 tons, or $12\frac{1}{2}$ per cent.

Meat. — The total importations of this article during the first six months of 1888 aggregated 5,734 tons — 4,478 tons, or 78 per cent., having been sent by the United States. The statistics do not give the quantity of this article imported during the corresponding period of 1887, but the table shows that there was a decrease for 1888 in value.

Oats, Indian corn, and buckwheat. — The total imports during the six months of 1888 were 150,106 tons, being an increase over the same period of 1887 of 51,000 tons, or 33 per cent. The imports from the United States of this merchandise, however, decreased from 21,969 tons in 1887 to 11,133 tons in 1888, a difference of 10,836 tons, or 50 per cent. The increase came from Russia.

Oils, vegetable, not alimentary. — Here the total imports have decreased from 12,664 tons to 9,979 tons, or over 20 per cent. This decrease was borne, in large proportion, by the United States, the same having been from 2,809 tons in 1887 to 1,995 tons in 1888, a decrease of 814 tons, or 29 per cent.

Oil-seed. — A marked increase is shown for 1888. From 46,581 tons during the six months of 1887 the rise has been to 85,304 tons, a difference in favor of 1888 of 38,722 tons, or nearly 85 per cent. From the United States the receipts were insignificant in 1888, while during the six months of 1887 1,045 tons were received thence. The increase came from England, India, and Russia.

Peas, lentils, and beans. — There were imported from all countries during the six months of 1888 14,456 tons, an increase of 5,047 tons, or over 50 per cent. over the corresponding period of the preceding year. The United States participated in 1887 to the extent of 1,312 tons (15 per cent.), but sent next to nothing during the six months of this year. France, Russia, and Roumania furnished the increase.

Petroleum. — The total imports were 75,969 tons during the six months of 1888, against 59,591 tons during the same period of the year preceding. Of that quantity 61,121 tons came from the United States, or 90 per cent. The imports of Russian petroleum more than doubled during the period named, say from 5,508 tons in 1887 to 12,674 tons in 1888.

Resin and bitumen. — There were received during the six months of 1888 in the corresponding period of the year preceding 1,000 tons from the United States.

Rye. — The total imports of this grain aggregated 52,697 tons during the first half year of 1888, against 62,423 tons during the corresponding period of 1887, showing a decrease of nearly 10,000 tons, or 16 per cent. The decrease in the receipts from the United States was large, the same having fallen off from 5,873 tons in 1887 to 693 tons in 1888.

Starch. — The importations of starch amounted to 1,890 tons during the first six months of 1888, which was an increase over the corresponding period of 1887 of nearly 100 tons; but the receipts from the United States have nearly tripled, having risen from 60 to 170 tons, the latter being nearly 10 per cent of the total imports of this article.

Sirups and molasses containing less than 50 per cent of saccharine matter. — During the first half of the year 1888 there were imported from all countries 1,423 tons, against 1,593 tons during the corresponding period of the year preceding, a slight decrease for 1888. From the United States only 8 tons of the above-named quantity were received in 1888, against 44 in 1887.

Sirups and molasses for distilling purposes. — For the half year of 1888 importations amounted to 9,783 tons, against 9,341 tons during the corresponding period of 1887, showing a slight increase for 1888. Here the United States participated largely, 2,948 tons, or over 30 per cent., having been received thence in 1888, and 4,387 tons, or nearly 50 per cent., in 1887. Holland is our principal competitor in this article, the imports from that country having increased from 3,397 tons in 1887 to 5,402 tons in 1888, a difference in favor of 1888 of nearly 2,000 tons.

Leaf tobacco. — The total receipts of this merchandise were a little over 4,000 tons in the half year of 1888, the same as the year before, the United States participating in 1888 to the extent of 1,797 tons, or 45 per cent., and in the year preceding 2,353 tons, or nearly 60 per cent. Holland also contributed largely in this article, having furnished about 25 per cent. of the total imports in both years.

Manufactured tobacco, as cigars and cigarettes. — The amount received was 88 tons, the same as in 1887, respectively 40 and 45 per cent. having been furnished by the United States.

Wheat. — The importations of wheat amounted to 350,621 tons during the six months of 1888, against 314,980 tons the year before, an increase of 35,632 tons, or over 11 per cent. In the receipts of this merchandise from the United States there was an unusually large falling off—from 163,456 tons in 1887 to 45,263 tons, a difference of 118,000 tons, or nearly 75 per cent., and the percentage in the total imports has fallen off from 48 per cent. to less than 14 per cent. There was a large increase in the receipts from Russia and Roumania.

Wood for building purposes. — Oak and walnut was received to the amount of 31,000 cubic meters during the six months of 1888, against 34,000 cubic meters in the corresponding period of 1887, being a decrease of 3,000 cubic meters, or 9 per cent. The receipts from the United States have largely in-

Prepared wood for construction of other kinds. — There was a large increase as to the receipts from the United States, the same having risen from 6,275 cubic meters during the first half year of 1887 to 10,479 cubic meters during the same period of 1888, an increase of over 4,000 cubic meters, or about 65 per cent. The total receipts (196,000 cubic meters) in 1888 were a little better than during the corresponding period of 1887.

EXPORTATIONS.

Arms. — Exports during the first six months of 1888 amounted to 5,100,000 francs, against 4,900,000 francs during the corresponding period of 1887, respectively 480,000 and 777,000 francs' worth having gone to the United States, showing a decrease for the present year of 297,000 francs, nearly 40 per cent.

Chemical products. — The exportations aggregated 7,900 tons in the six months of 1888 and 5,992 tons the year before, respectively 438 and 592 tons having gone to the United States.

Clothing, ready-made. — During the six months of 1888 exports amounted to 4,947,000 francs, being a slight increase over the corresponding period of the preceding year. The United States had 1,500,000 francs in 1888 and 1,750,000 francs in 1887.

Looking-glasses and mirrors. — Exports to the value of 3,252,000 francs were made during the half year of 1888, against 3,581,000 francs the corresponding half year of 1887, a slight decrease. The United States took about one-third of the total exportation both years.

Ordinary glassware. — The exports amounted to 5,321 tons during the first half year of 1888, being a slight decrease as compared with the corresponding period of 1887. In the exportation to the United States of this article, however, there was a very large increase, the same having been from 314 tons for the six months of 1887 to 1,193 tons, a difference in favor of the half year of 1888 of 879 tons.

Window-glass. — This is an article that is very extensively manufactured in Belgium, and its exportation is increasing from year to year. During the half year of 1888 there were exported 59,208 tons, against 57,034 tons the corresponding half year of 1887, showing an increase of over 2,000 tons. The United States had respectively 16,548 and 14,742 tons, an increase for 1888 of over 1,800 tons, or $12\frac{1}{2}$ per cent., and more than any other country.

Raw hides. — There were exported a total amount of 16,710 tons in the six months of 1888, which was an increase of 5,500 tons, or about 50 per cent., over the corresponding period of the preceding year. The exportation of this article to the United States has likewise increased from 1,300

Hops.—There were 635 tons sent out during the half year of 1888, against 1,125 tons for the corresponding period of the preceding year, a decrease of 490 tons, or nearly 50 per cent. In the exportation of this article to the United States the decrease has been in the same proportion, it having fallen off from 181 to 96 tons.

Iron in bars and sheets.—During the half year of 1888 there left Belgium 110,000 tons, being a slight decrease as compared with the corresponding period of the preceding year. The United States took respectively 4,700 and 5,300 tons of the above quantities, being a slight decrease for 1888.

Old iron.—Scarcely any was exported during the half year of 1888, while the statistics give the exports of the corresponding period of the preceding year at 7,520 tons, 6,400 tons of this (85 per cent.) having gone to the United States.

Iron rails.—There were exported 5,408 tons in the six months of 1888, being a decrease of about 1,500 tons as compared with the corresponding period of 1887. In the exportation to the United States of this article the decrease was in larger proportion, the figures having been 750 tons in 1888 against 1,042 tons in 1887.

Linen laces.—During the half year of 1888 the exportation amounted to 53,000 francs, against only 28,500 francs during the six months of 1887, the United States participating only in 1887 to the value of 950 francs.

Paper (wall and paste-board excluded).—Exports amounted to 9,600 tons during the six months of 1888, being about the same as the year before. The United States participated both years only slightly in this article.

Peas, lentils, and beans.—These left the country to the amount of 5,912 tons, against 4,455 tons the corresponding period of the preceding year, an augmentation for 1888 of nearly 1,500 tons, or over 30 per cent. The United States had 1,882 tons, over 30 per cent. of the said exportation in 1887, but only 181 tons in 1888. About one-half of the exportation of this merchandise was to France.

Rags and shoddy.—The total exports of this article aggregated 17,589 tons during the first half year of 1888, being an increase of nearly 3,000 tons over the corresponding period of 1887. Of this amount 3,638 tons went to the United States in 1888 and 2,807 tons in 1887, making an increase for 1888 of over 800 tons, or nearly 30 per cent.

Soda.—There left Belgium 18,000 tons during the half year of 1888, against 15,000 tons the corresponding period of 1887, only 18 tons of this having gone to America in 1888 and 217 tons in 1887.

Steel in bars, sheets, or wire.—Exports during the six months of 1888 amounted to 14,582 tons, being a slight increase over the same period of 1887. The United States had the lion's share in this article, having had 9,032 tons, or nearly 75 per cent.

Crude cast-steel.—During the six months of 1888 there were sent out 2,850 tons, while the year before only 430 tons left the country. The

Steel rails.—The exports during the half year of 1888 amounted to 28,041 tons, being a slight increase over 1887. Only a few hundred tons of this went to us.

Raw sugar.—In this merchandise there was a large decrease in the exportation during the half year of 1888, as compared with the same period of 1887, the quantities having been respectively 24,555 tons and 41,226 tons, showing a falling off for 1888 of 16,671 tons, or nearly 40 per cent. The United States had none in 1888, but 572 tons in 1887.

Tissues of cotton.—Exports amounted to 2,865 tons during the half year of 1888, being a slight decrease over the corresponding period of 1887. In the exportation of this article to the United States, however, there was a large increase for 1888, the quantities for the six months having been 109 tons for 1888 against 34 tons for 1887.

Tissues of flax, hemp, and jute.—Exports to the amount of 913 tons were made during the six months of 1888, against 1,151 tons the year preceding, a decrease of over 20 per cent. To the United States there were exported respectively 16 and 36 tons, a decrease of over 50 per cent.

Tissues of silk.—There were 9,176 kilograms exported during the first half year of 1888, against 4,367 kilograms the corresponding period of 1887, showing an increase of 4,809 kilograms, more than 50 per cent. The United States had respectively 1,225 and 1,270 kilograms, a slight decrease for 1888.

Tissues of wool, as broadcloth, cashmere, and coatings.—The exports amounted to 850 tons during the six months of 1888, against 760 tons the year before, the United States having had respectively 62 and 35 tons.

Wool, raw.—Wool to the amount of 53,654 tons left Belgium during the first half year of 1888, against 51,960 tons during the corresponding period of 1887, showing an increase of about 2,500 tons. Only very little of the above quantities went to the United States.—ANTWERP, September 7, 1888.

JOHN H. STEUART,

Consul.

DETERIORATION OF HENEQUEN FIBER CAUSED BY RECENT HURRICANE.

On the 10th of September the hurricane that swept the Island of Cuba expended a portion of its force upon Yucatan, and especially upon its coast line.

Contrary to the published newspaper reports, the port of Progreso and the shipping therein suffered little actual damage, but the henequen-growing belt suffered severely. Upon my return to Merida from Progreso, where I had been to aid an American vessel, I noticed that the henequen plants upon the haciendas through which the railroads passed presented a peculiar appearance. Collecting some of the leaves, as specimens, and examining them under my microscope I found the cells to be in places completely crushed, owing to the vibrations of the leaves, they being impacted one against the other by the force of the gale. The leaf thus bruised eventually withers and dies around and above the bruised portion, leaving a mass of dried pulp and blackened decayed fiber.

I have just returned from making a thorough survey of the henequen-growing belt of Yucatan. I believe it to be a fact that at least 25 per cent. of the mature and the less certain that the planters will,

DETENTION OF COFFEE AND OTHER EXPORT PRODUCTS.

As an apt illustration of the necessity in this country of additional railways, or other improved means of communication, I call attention to the accumulation of products for export now existing at Puerto Villamizar, the river port of the Colombian city of Cucuta and the head of navigation upon the river Zulia. The drouth of the past few months, which, although somewhat excessive, has been by no means extraordinarily remarkable, has caused such a diminution of water in the above-mentioned river that there are at present no less than 30,000 bags of coffee, besides 8,000 hides, and a large amount of various other valuable products awaiting transportation to Maracaibo.

Although the locality of this large accumulation is upon Colombian territory, the greater part is produced in Venezuela, as, owing to the present very unsatisfactory transit methods, the productions of a large part of this section are necessarily obliged to take this route. This delay causes considerable embarrassment to our Maracaibo exporters, and at times serious losses, as the coffee market abroad is always uncertain and fluctuating.—MARACAIBO, *October 2, 1888.*

E. H. PLUMACHER,
Consul.

HAMBURG'S SHIPPING.

It is a fact generally known that Hamburg is by far the most important sea-port on the European continent, but few of those interested in shipping matters have a remote idea to what extent this distinction is justified. The number of sea-going vessels arriving in and departing from Hamburg is a very great one, but, as the inclosed tables will show, it is also steadily on the increase. It is a fact worthy of notice that the value of imports from the United States into Hamburg has continued to increase, notwithstanding the sharp competition on the part of the North German-Lloyds, of Bremen, in running two of their fast steamers per week during the greater part of the year.

Taking the year 1887, for which complete statistics have now been issued, it will be found that no fewer than 7,308 sea-going vessels arrived at Hamburg. Of this number 4,753 were steam-ships, varying in size from 100 to 2,600 registered tons net. This shows that British vessels alone enjoy almost as great a share of the carrying trade as Prussia and Hamburg combined.

During 1887 there sailed from Hamburg 7,338 sea-going vessels, of which 4,775 were steam-ships; 1,174 of the 8,538 sailed belonged to Prussia, 1637 to Hamburg, and 2,488 to Great Britain. The difference in the number of those arrived and those sailed is only 30, which amounts to an increase of over

	Arrived.	Sailed.
1885.....	6,790	6,798
1886.....	6,913	6,906
1887.....	7,308	7,338

As will be seen in Table III the tonnage of vessels arrived during each year, from 1885 to 1887 inclusive, was as follows: 1885, 3,704,112 tons; 1886, 3,791,992 tons; 1887, 3,920,234 tons; while that of the vessels sailed for the same period was, in 1885, 3,712,394 tons; 1886, 3,786,845 tons; 1887, 3,927,865 tons.

When it is considered that these figures apply to sea-going vessels only, they must necessarily surprise. A gentleman long connected with the shipping business, both in New York and in this city, to whom I had occasion to show these figures a day or two ago, told me that he had always considered himself pretty well posted on all matters touching the shipping of Hamburg, but he had never thought that the amount of tonnage arriving and departing was so great. The average loading capacity of sailing vessels was 257.66 tons, and that of steam-ships 689.66 tons. About one-half of the sailing vessels are of less than 100 tons burden.

The same table shows that of the vessels arrived in 1885, 5,856 carried cargo and 934 carried ballast; 1886, 5,920 carried cargo and 993 carried ballast; 1887, 6,338 carried cargo and 970 carried ballast. Of the vessels sailed in 1885, 5,142 carried cargo and 1,656 carried ballast; 1886, 5,320 carried cargo and 1,586 carried ballast; 1887, 5,564 carried cargo and 1,774 carried ballast.

The number of vessels sailing in ballast is very great. In 1887 24.18 per cent. of all sailed carried ballast. This circumstance is, however, accounted for satisfactorily by the fact that most of these vessels are either British coalers returning to England, fishermen putting out for their catch, or small craft belonging to the various isles in the Baltic and German oceans.

A comparison between the number of sailing and steam vessels for the three years 1885, 1886, and 1887 gives the following result: 1885, 34.1 per cent. sailing, 65.9 per cent. steam; 1886, 32.7 per cent. sailing, 67.3 per cent. steam; 1887, 34.7 per cent. sailing, 65.3 per cent. steam; showing but a slight variation from year to year. During 1887 there arrived on the average about 13 steamers per day.

All the incoming sea-going vessels during the same year together were manned by 109,639 men, or an average of 15 men per vessel. The outgoing vessels carried 109,827 men, or an average of over 14 men per vessel. The average crew of American vessels was over 16. The small number of vessels belonging to the United States are principally of more than 1,200 tons burden and engaged in carrying petroleum to Hamburg, while their cargo out-ly consists of empty petroleum barrels and manure salt in bulk. The port have been described

of the harbor has been reserved as a free port, the boundaries of which have been strongly fenced in and otherwise guarded. Property within these limits has increased enormously in value. Extensive docks, warehouses, sheds, etc., have been erected, and, to judge from the number of new sailing and steam-vessels building for Hamburg account, this new port promises to become well patronized. All of the Hamburg steam-ship lines are increasing their fleets, and as a proof that the days of sailing vessels are not numbered I would mention that one firm alone recently gave an order for the construction of four large iron sailing vessels. The stocks of all of the ship-building yards are full. I am informed that at present over forty large sailing and steam vessels are building in Hamburg alone, without mentioning many others in course of construction for Hamburg account in other German and foreign yards.

The Hamburg South American Company leads all the lines, as regards additions to their fleets, now having about twenty-four large steamers engaged in the trade. Then there is a new line which has just been organized to run large steamers between here and Australia. They are to have six steamers to begin with. The King Sin line, plying between here and China and Japan, has also ordered new steamers. The Kosmos and the Pacific lines, which divide the business between Hamburg and the west coast of South America, own only new boats and are ordering more. Last, but not least, there is the Hamburg-American Packet Company, which at last seems to have awakened to the fact that they had better move with the times or be crowded out by strong competition. This, however, refers only to their New York line. They have lately increased their capital stock to 30,000,000 marks (about \$7,000,000), have sold three of their largest steamers, the Frisia, Westphalia, and Lessing, and are now building two fast steamers of about 10,000 tons each for passenger traffic, and three freight and emigrant boats of about 4,000 tons each. The two former are to eclipse everything that has so far been produced in ocean steam-ships, the contract calling for an average speed of 19 knots an hour. Including stoppages they will therefore presumably make the run from New York to Hamburg in eight days. At present the American mails hardly ever arrive before the tenth day after leaving New York.

With the above mentioned additions and two boats building for the West India line, the fleet of the Hamburg-American Packet Company will next year number thirty-five first-class steamers. The confidence of the investing public, as far as this and most other companies are concerned, is steadily growing. Large purchases by investors of Hamburg-American Packet Company's stock have been made, and it is now strong and quoted at \$1.42.

It is impossible for me to say whether this remarkable activity and prosperity in the ocean shipping of this port can and will continue, but in all probability it will, for some time to come at least. Hamburg is in direct communication with nearly every part of the world, and in 1887 imported merchandise by sea alone valued at over \$25,000,000. — HAMBURG, *October 5, 1888.*

TABLE No. I.—Sea-going vessels arrived at

Countries and coasts arrived from—	With cargo.		In ballast.	
	Ves- sels.	Registered tons.	Ves- sels.	Registered tons.
Prussia: Province of—				
Prussia	66	19,401	2	2,295
Pomerania	4	479	10	7,840
Schleswig-Holstein, on the Baltic	50	4,743	23	1,134
Schleswig-Holstein, on the North Sea	73	2,468	252	27,593
Schleswig-Holstein, on the Lower Elbe	5	321	3	2,527
Hanover, eastern part, on the North Sea	55	1,109	234	35,408
Hanover, on the Lower Elbe	18	2,564	1	20
Hanover, western part, including Jade district	76	2,511		
Rhineland	3	185	10	2,607
Oldenburg	157	5,878	2	1,455
Mecklenburg	2	99	196	20,565
Bremen	461	86,291	49	1,875
Hamburg (Cuxhaven and islands of the Lower Elbe)	3	266		
Total of Germany	973	126,315	782	103,319
European Russia, on the White Sea and Arctic Ocean	5	879		
European Russia, on the Baltic	81	39,058		
European Russia, on the Black Sea and Sea of Azof	66	83,638	2	102
Sweden	252	45,158	3	1,260
Norway with Spitzbergen	178	87,576	6	4,947
Denmark, with Iceland and Faro	53	7,735	11	324
Heligoland	170	37,092		
Great Britain and Ireland (coalers)	859	555,292	89	69,634
Great Britain and Ireland (vessels with other cargo)	1,947	1,217,721	29	15,285
The Netherlands	294	66,073	10	9,798
Belgium	86	65,480	36	17,979
France, on the Atlantic	120	60,251		
France, on the Mediterranean	36	25,033	1	108
Spain, on the Atlantic	45	31,183		
Spain, on the Mediterranean, and Gibraltar	50	38,284		
Portugal, including the Azores	82	45,300		
Italy and Malta	39	41,134		
Austria-Hungary	13	10,687		
Greece	6	4,130		
Roumania	2	1,847		
Turkey in Europe	4	2,876		
Total of Europe, exclusive of Prussia, etc.	4,338	2,466,427	187	119,437
British North America	10	14,197		
United States, on the Atlantic	319	445,451		
Mexico, on the Atlantic	69	32,167		
Mexico, on the Pacific	15	8,988		
Central America, on the Pacific	3	1,415		
West Indies	85	76,962		
South America, on the Atlantic, north of Brazil	13	4,152		
Brazil	104	102,680		
South America, on the Atlantic, south of Brazil	46	50,783		
Chili	150	148,267		
The rest of South America, on the Pacific	22	9,701		
Algers	3	552		
Cape Colony and Natal	2	499		
Africa, on the Atlantic	51	54,389	1	174
Africa, on the Indian Ocean	7	3,530		
Asia, on the Mediterranean and Black Seas (Levant)	1	724		
East India and Indian Isles	57	76,561		
China	32	32,934		
Japan	14	25,447		
Australia, with islands in the Pacific	24	15,163		
Total of non-European countries	1,027	1,104,562	1	174
RECAPITULATION.				
Germany	973	126,315	782	103,319
Europe, exclusive of Germany	4,338	2,466,427	187	119,437
Non-European countries	1,027	1,104,562	1	174
Total	6,338		970	

Total.		Steam-ships.		Crews of all vessels.	Under German flag. Home port in —					
Ves- sels.	Registered tons.	Ves- sels.	Registered tons.		Hamburg.		Bremen.		Lübeck.	
					With cargo.	In bal- last.	With cargo.	In bal- last.	With cargo.	In bal- last.
66	19,401	50	18,311	726	4					
6	2,774	3	2,647	81		1				
60	12,583	26	10,439	430	2	5				
96	3,602			228	3	1				
257	27,914	10	2,567	1,144	1	13		4		
58	3,636	1	1,552	156		1		1		
252	37,972	10	4,545	1,366		18	2	5		
77	2,531			179						
3	185			9						
167	8,485	7	2,277	467	3		2	2		
4	1,554			21		1				
657	106,856	232	24,882	3,232	3	4	359	185		
52	2,141	2	174	134	2	14				
1,755	229,634	341	67,394	8,173	18	58	363	197		
5	879			32						
81	39,058	75	38,445	1,185	35		2			
66	83,638	66	83,638	1,457	8					
254	45,260	108	35,958	1,902	39		4			
181	88,836	160	86,901	2,837						
59	12,682	16	9,271	418	3	2				
181	37,416	168	37,048	1,860	161					
809	555,292	778	546,369	13,436	300		1			
2,036	1,287,355	1,959	1,277,902	38,072	387	13		1		
323	81,358	205	73,868	3,385	2	7	1			
96	75,278	89	73,520	1,893	52	2	1			
156	78,230	102	66,861	2,394	3	16				
36	25,033	33	23,903	718	29					
46	31,291	41	30,237	866	2	1				
50	38,284	50	38,284	1,053						
82	45,300	78	43,635	1,423	3		7			
39	41,134	38	40,982	852	36		1			
13	10,687	13	10,687	265	13					
6	4,130	6	4,130	106	4					
2	1,847	2	1,847	37						
4	2,876	2	2,344	57						
4,525	2,585,864	3,989	2,525,840	74,248	1,077	41	17	1		
10	14,197	9	14,030	256	9					
319	445,451	137	273,938	11,501	118		76			
69	32,167	12	16,062	906	19		6			
15	8,988			190	4					
3	1,415			33						
85	76,962	44	61,424	1,909	39		1		1	
13	4,152	1	1,103	126	7					
104	102,680	62	91,097	2,938	60		1			
46	50,783	30	44,108	1,300	28					
150	148,267	35	42,154	3,208	76					
22	9,701			220	6					
3	552			20						
2	499			17						
51	54,389	47	53,027	1,397	26					
8	3,704	4	2,340	129	6	1				
1	724	1	724	16						
57	76,561	28	47,715	1,429	6		10			
32	32,934	19	21,349	819	24		1			
14	25,447	14	25,447	490	1					
24	15,163			314	2					
1,028	1,104,736	443	693,918	27,218	431	1	95		1	
1,755	229,634	341	67,394	8,173	18	58	363	197		
4,525	2,585,864	3,989	2,525,840	74,248	1,077	41	17	1		
1,028	1,104,736	443	693,918	27,218	431	1	95		1	
		†4,773	3,287,152		1,526		475		1	
						100		198		
*7,308										
						1,289,157		189,166		241
						53,487		19,103		

TABLE NO. I. — *Sea-going vessels arrived at*

Countries and coasts arrived from —	Under German flag. Home port in —					
	Prussia.		Mecklenburg.		Oldenburg.	
	With cargo.	In bal- last.	With cargo.	In bal- last.	With cargo.	In bal- last.
Prussia : Province of —	60					
Prussia	3		1		1	
Pomerania	45	4	1		2	
Schleswig-Holstein, on the Baltic	65	21		6	1	4
Schleswig-Holstein, on the North Sea	2	160			7	
Schleswig-Holstein, on the Lower Elbe	48	1		2	1	4
Hanover, eastern part, on the North Sea	12	79			4	
Hanover, on the Lower Elbe	70	1				
Hanover, western part, including Jade district					26	4
Rhineland	125	2			1	
Oldenburg	1	1			35	1
Mecklenburg	54	2				
Bremen	1	34				
Hamburg (Cuxhaven and islands of the Lower Elbe)	486	306	1	8	78	13
Total of Germany						
European Russia, on the White Sea and Arctic Ocean	3				1	
European Russia, on the Baltic	10		1		1	
European Russia, on the Black Sea and Sea of Azof	4				2	
Sweden	112	1	1		1	
Norway, with Spitzbergen	13					
Denmark, with Iceland and Faro	31					
Heligoland	5	1	2		1	
Great Britain and Ireland (coalers)	48					3
Great Britain and Ireland (vessels with other cargo)	36				1	
The Netherlands	45	4			1	
Belgium	2	1			1	3
France, on the Atlantic	7	7	3			
France, on the Mediterranean	1		1			
Spain, on the Atlantic						
Spain, on the Mediterranean, and Gibraltar	2				38	
Portugal, including the Azores						
Italy and Malta						
Austria-Hungary						
Greece						
Roumania					47	6
Turkey in Europe	319	14	8			
Total of Europe, exclusive of Prussia, etc.						
British North America	13		5		1	
United States, on the Atlantic	3		1		10	
Mexico, on the Atlantic	2				1	
Mexico, on the Pacific	1				1	
Central America, on the Pacific	4		2			
West Indies	2		1		3	
South America, on the Atlantic, north of Brazil	3		1			
Brazil					9	
South America, on the Atlantic, south of Brazil	2				3	
Chili	6					
The rest of South America, on the Pacific						
Algiers	1					
Cape Colony and Natal						
Africa, on the Atlantic						
Africa, on the Indian Ocean	1		1		1	
Asia, on the Mediterranean and Black Seas (Levant)						
East India and Indian Isles	1				5	
China	2		2		34	
Japan	41		13			
Australia, with islands in the Pacific						
Total of non-European countries						
RECAPITULATION.						
Germany	486	306	1	8	78	13
Europe, exclusive of Germany	319	14	8		47	6
Non-European countries	41		13		34	
Vessels with cargo	846		22		159	
		320		8		19

Under foreign flag.

Russian.		Swedish.		Norwegian.		Danish.		British.		Dutch.	
With cargo.	In ballast.	With cargo.	In ballast.	With cargo.	In ballast.	With cargo.	In ballast.	With cargo.	In ballast.	With cargo.	In ballast.
						1				1	
		1								1	1
										3	18
				11		30		5		1	
1			2	2	11	8		92			11
								1		1	
			1		1					3	
				1						1	
			1			1		2	2	6	
	1										
1	1	1	4	3	23	1	39	3	99	17	30
						1					
1		2				26		2		1	
								51			
		76		5		10			1	3	
		1		158	3	2				3	
			1			18	2		1	1	
								2	10		
						3		452		3	
		1		6	1	7	1	1,499	62	6	1
							1	2	10	243	2
						6		20	7	2	
1		2			1	6	4	6	4	6	
1		1						3			
				1				16			
								1			
								31			
								1			
								2			
								2			
								3			
3		83	1	170	5	79	8	2,093	95	268	3
								1			
3		6		42		1		45		1	
1		2		18		4		3		2	
				1		3		4			
		6		12		2		11		1	
				1		2		1			
		3		13		2		13		3	
		2		2				8			
		1		1				57			
				3		3		1			
								3			
		1		1				19			
				1							
				1							
				2		1		34		1	
								2			
								11			
		4		1		1		6			
4		24		100		19		219		8	
1	1	1	4	3	23	1	39	3	99	17	30
3		83	1	170	5	79	8	2,093	95	268	3
4		24		100		19		219		8	
8		108		273		99		2,315		293	
	1		5		28		47		194		33
4,328		38,892		145,572		34,540		1,620,675		70,059	
350		1,200		11,535		9,619		75,506		4,129	
4,678		40,092		157,107		44,159		1,696,181		74,188	

TABLE NO. I.—*Sea-going vessels arrived at*

Countries and coasts arrived from—	Under foreign flag.			
	Belgian.		French.	
	With cargo.	In ballast.	With cargo.	In ballast.
Prussia: Province of—				
Prussia.....				
Pomerania.....				
Schleswig-Holstein, on the Baltic.....				
Schleswig-Holstein, on the North Sea.....				
Schleswig-Holstein, on the Lower Elbe.....				
Hanover, eastern part, on the North Sea.....				
Hanover, on the Lower Elbe.....				
Hanover, western part, including Jade district.....				
Rhineland.....				
Oldenburg.....				
Mecklenburg.....				
Bremen.....				
Hamburg (Cuxhaven and islands of the Lower Elbe).....				
Total of Germany.....				
European Russia, on the White Sea and Arctic Ocean.....				
European Russia, on the Baltic.....				
European Russia, on the Black Sea and Sea of Azof.....				
Sweden.....				
Norway, with Spitzbergen.....		I		I
Denmark, with Iceland and Faro.....				
Heligoland.....				
Great Britain and Ireland (coalers).....		I	85	I
Great Britain and Ireland (vessels with other cargo).....				
The Netherlands.....				
Belgium.....				
France, on the Atlantic.....				
France, on the Mediterranean.....				
Spain, on the Atlantic.....				
Spain, on the Mediterranean, and Gibraltar.....				
Portugal, including the Azores.....				
Italy and Malta.....				
Austria-Hungary.....			85	2
Greece.....	2			
Roumania.....				
Turkey in Europe.....				
Total of Europe, exclusive of Prussia, etc.....				
British North America.....				
United States, on the Atlantic.....				
Mexico, on the Atlantic.....				
Mexico, on the Pacific.....				
Central America, on the Pacific.....				
West Indies.....				
South America, on the Atlantic, north of Brazil.....			2	
Brazil.....				
South America, on the Atlantic, south of Brazil.....				
Chili.....			I	
The rest of South America, on the Pacific.....	4			
Algiers.....				
Cape Colony and Natal.....				
Africa, on the Atlantic.....				
Africa, on the Indian Ocean.....			I	
Asia, on the Mediterranean and Black Seas (Levant).....			I	
East India and Indian Isles.....			5	
China.....				
Japan.....	4			
Australia, with islands in the Pacific.....				
Total of non-European countries.....			85	2
RECAPITULATION.				
Germany.....	2		5	
Europe, exclusive of Germany.....	4		90	
Non-European countries.....	6			2
Vessels with cargo.....				
Vessels in ballast.....				

Under foreign flag.

[illegible]

TABLE NO. II.—Sea-going vessels departed

Countries and coasts departed for—	With cargo.		In ballast.	
	Ves- sels.	Registered tons.	Ves- sels.	Regis- tered tons.
Prussia : Province of—				
Prussia	63	15,492	3	1,281
Pomerania	75	6,556	1	20
Schleswig-Holstein, on the Baltic	103	7,156	10	1,326
Schleswig-Holstein, on the North Sea	112	4,089	199	18,489
Schleswig-Holstein, on the Lower Elbe	35	936	7	459
Schleswig-Holstein, on the North Sea	10	1,476	181	9,961
Hanover, eastern part, on the North Sea	11	1,655	2	46
Hanover, on the Lower Elbe	43	1,386		
Hanover, western part, including Jade district	3	191		
Rhineland	41	3,290	32	1,723
Oldenburg	11	641		
Mecklenburg	1	40		
Lübeck	362	70,065	282	29,424
Bremen	2	235	3	86
Hamburg (Cuxhaven and islands of the Lower Elbe)	872	113,208	720	62,815
Total of Germany				
European Russia, on the White Sea and Arctic Ocean	3	681	1	1,022
European Russia, on the Baltic	99	39,660	1	1,174
European Russia, on the Black Sea and Sea of Azof	17	18,236	17	5,801
Sweden	182	42,265	41	17,220
Norway with Spitzbergen	179	87,933	2	976
Denmark, with Iceland and Faro	116	16,080	2	254
Heligoland	180	37,275	951	719,628
Great Britain and Ireland	2,180	1,310,437	15	5,209
The Netherlands	279	68,125	7	8,905
Belgium	61	31,396	5	1,095
France, on the Atlantic	93	54,752	1	1,051
France, on the Mediterranean	25	17,455	1	919
Spain, on the Atlantic	43	16,531		
Spain, on the Mediterranean, and Gibraltar	55	41,922	1	361
Portugal, including the Azores	67	33,863		
Italy and Malta	41	43,258		
Austria-Hungary	13	10,772		
Roumania	2	1,805		
Total of Europe, exclusive of Prussia, etc.	3,635	1,872,446	1,045	763,615
British North America	19	29,612	1	1,302
United States, on the Atlantic	328	461,301	4	5,137
United States, on the Pacific	11	12,068		
Mexico, on the Atlantic	27	20,225		
Mexico, on the Pacific	10	4,468	1	409
Central America, on the Atlantic	9	2,801	1	1,102
Central America, on the Pacific	70	79,762		
West Indies	59	15,271		
South America, on the Atlantic, north of Brazil	172	146,469	1	53
South America, on the Atlantic, south of Brazil	69	59,575		
Brazil	73	76,301		
South America, on the Pacific, exclusive of Chili	21	10,178		
Chili	5	1,531		
Cape Colony, with Natal	70	66,134		
Africa, on the Atlantic	10	3,866		
Africa, on the Indian Ocean	1	1,019		
Asia, on the Mediterranean and Black Seas	14	14,928		
East India and East Indies	32	39,695	1	294
China	17	31,964		
Japan	4	3,317		
The rest of Asia	36	27,008		
Australia and Pacific Islands	1,057	1,107,493	9	8,288
Total of non-European countries				
RECAPITULATION.				
Germany	872	113,208	720	62,815
The rest of Europe	3,635	1,872,446	1,045	763,615
Non-European countries	1,057	1,107,493	9	8,288
Vessels with cargo	5,564			
			1,774	

Total.		Steam-ships.		Crews of all vessels.	Under German flag. Home port in —					
Ves- sels.	Registered tons.	Ves- sels.	Registered tons.		Hamburg.		Bremen.		Lübeck.	
					With cargo.	In bal- last.	With cargo.	In bal- last.	With cargo.	In bal- last.
66	16,773	42	15,075	645	6	1				
75	6,556	8	2,774	307	5					
104	7,176	20	3,685	386	10					
122	5,415	1	750	315	6					
234	19,425	2	223	813	2	7		3		
17	1,935			51			6			
192	11,616	6	2,012	591		14	3			
45	1,432			101						
3	191			10						
73	5,013	5	2,285	242	2			1		
11	641			35						
1	40			3						
644	99,489	227	21,132	3,101	1		304	240		
5	321	2	235	23	1	1				
1,592	176,023	313	48,171	6,623	33	23	313	244		
3	681			22						
100	40,682	84	37,255	1,316	42		2			
18	19,410	18	19,410	396	9					
199	48,066	107	36,501	1,870	26		3	1		
220	105,153	162	87,576	3,182	1			1		
118	17,056	24	12,526	674	11	1				
182	37,529	169	37,135	1,862	162					
3,131	2,030,065	2,840	1,933,227	55,171	395	303		12		
294	73,334	194	66,970	3,172	3					
68	40,301	64	40,026	1,249	51	2	2			
98	55,847	79	52,966	1,753		1				
26	18,506	26	18,506	539	25					
44	17,450	26	14,810	640						
55	41,922	55	41,922	1,162						
68	34,224	68	34,224	1,127	1	1				
41	43,258	40	42,960	902	40					
13	10,772	13	10,772	266	13					
2	1,805	2	1,805	40	2					
4,680	2,636,061	3,971	2,488,591	75,343	781	308	7	14		
20	30,914	19	29,612	563	14					
332	466,438	130	271,788	11,776	127	3	73			
11	12,068			214	2					
27	20,225	12	16,253	527	20		2			
10	4,468			109	3					
1	400			9						
9	2,801			80	1					
71	80,864	54	76,379	1,966	40	1	1			
59	15,271	2	2,606	484	15		5			
172	146,469	95	128,555	4,338	81		1		1	
70	59,628	29	41,795	1,378	25	1				
73	76,301	40	48,337	1,854	67					
21	10,178			239	10					
5	1,531			43	1					
70	66,134	55	61,607	1,670	33					
10	3,866	3	2,166	131	5					
1	1,019	1	1,019	23						
14	14,928	2	3,971	262	6		1			
33	39,989	28	36,597	973	24	1				
17	31,964	17	31,964	638						
4	3,317	4	3,317	74						
36	27,008			510	12		2			
1,066	1,115,781	491	755,966	27,861	486	6	85		1	
1,592	176,023	313	48,171	6,623	33	23	313	244		
4,680	2,636,061	3,971	2,488,591	75,343	781	308	7	14		
1,066	1,115,781	491	755,966	27,861	486	6	85		1	
		*4,775	3,292,728		1,300		405		1	
						337		258		
7,338										
					1,079,980		159,678		241	
					270,674		43,022			

TABLE No. II.—Sea-going vessels departed from

Countries and coasts departed for—	Under German flag. Home port in—					
	Prussia.		Mecklenburg.		Oldenburg.	
	With cargo.	In bal- last.	With cargo.	In bal- last.	With cargo.	In bal- last.
Prussia: Province of—	53	1			1	
Prussia.....	64		1			
Pomerania.....	92	1			1	
Schleswig-Holstein, on the Baltic.....	103	7			4	18
Schleswig-Holstein, on the North Sea.....	29	133		4	2	
Schleswig-Holstein, on the Lower Elbe.....	1	6				8
Hanover, eastern part, on the North Sea.....	7	139			3	
Hanover, on the Lower Elbe.....	40	2				2
Hanover, western part, including Jade district.....					13	
Rhineland.....	24	29			1	
Oldenburg.....	8		2			
Mecklenburg.....	1				25	16
Lübeck.....	26	19				
Bremen.....	1	2				
Hamburg (Cuxhaven and islands of the Lower Elbe)...					50	44
Total of Germany.....	449	339	3	4		
European Russia, on the White Sea and Arctic Ocean..	2		1		1	
European Russia, on the Baltic.....	24					
European Russia, on the Black Sea and Sea of Azof...	2		1		1	
Sweden.....	52					
Norway with Spitzbergen.....	11	1				
Denmark, with Iceland and Faro.....	74	1			2	
Heligoland.....	8				1	3
Great Britain and Ireland.....	60	47	3			
The Netherlands.....	23	7	1			
Belgium.....						
France, on the Atlantic.....	9					
France, on the Mediterranean.....	4	1				
Spain, on the Atlantic.....						
Spain, on the Mediterranean, and Gibraltar.....					36	
Portugal, including the Azores.....						
Italy and Malta.....						
Austria-Hungary.....						
Roumania.....						
Total of Europe, exclusive of Prussia, etc.....	269	57	7	3	41	3
British North America.....						
United States, on the Atlantic.....	20		10		1	
United States, on the Pacific.....					2	
Mexico, on the Atlantic.....					2	
Mexico, on the Pacific.....	1		1			
Central America, on the Atlantic.....					2	
Central America, on the Pacific.....	3				4	
West Indies.....	4				6	
South America, on the Atlantic, north of Brazil.....	8				12	
Brazil.....	10		1		4	
South America, on the Atlantic, south of Brazil.....	1		4		1	
Chili.....	1				6	
South America, on the Pacific, exclusive of Chili.....	2					
Cape Colony, with Natal.....	1				2	
Africa, on the Atlantic.....	3				2	
Africa, on the Indian Ocean.....						
Asia, on the Mediterranean and Black Seas.....	1				1	
East India and East Indies.....	1				2	
China.....						
Japan.....	2				4	
The rest of Asia.....	2		2			
Australia and Pacific Islands.....			18		51	
Total of non-European countries.....	60					
RECAPITULATION.						
Germany.....	449	339	3	4	50	
The rest of Europe.....	269	57	7	3	40	
Non-European countries.....	60		18		51	
Vessels with cargo.....	778		28		142	
		396		7		47

Under foreign flag.

[illegible]

TABLE NO. II.—Sea-going vessels departed from

Countries and coasts departed for—	Under foreign flag.			
	Belgian.		French.	
	With cargo.	In ballast.	With cargo.	In ballast.
Prussia: Province of—				
Prussia				
Pomerania				
Schleswig-Holstein, on the Baltic.....				
Schleswig-Holstein, on the North Sea.....				2
Schleswig-Holstein, on the Lower Elbe.....				
Hanover, eastern part, on the North Sea.....				
Hanover, on the Lower Elbe.....				
Hanover, western part, including Jade district.....				
Rhineland.....				
Oldenburg.....				
Mecklenburg.....				
Lübeck.....				2
Bremen				
Hamburg (Cuxhaven and islands of the Lower Elbe).....				
Total of Germany.....				
European Russia, on the White Sea and Arctic Ocean.....				
European Russia, on the Baltic.....				
European Russia, on the Black Sea and Sea of Azof.....				
Sweden.....				
Norway with Spitzbergen.....				2
Denmark, with Iceland and Faro.....			1	1
Heligoland.....				1
Great Britain and Ireland.....	1		76	4
The Netherlands.....				
Belgium.....				
France, on the Atlantic.....				
France, on the Mediterranean.....				
Spain, on the Atlantic.....				
Spain, on the Mediterranean, and Gibraltar.....				
Portugal, including the Azores.....				
Italy and Malta.....				
Austria-Hungary	1		77	8
Roumania.....				
Total of Europe, exclusive of Prussia, etc.....			1	1
British North America.....				
United States, on the Atlantic.....				
United States, on the Pacific.....				
Mexico, on the Atlantic.....				
Mexico, on the Pacific.....				
Central America, on the Atlantic.....				
Central America, on the Pacific.....				
West Indies.....				
South America, on the Atlantic, north of Brazil.....				
Brazil.....				
South America, on the Atlantic, south of Brazil.....				
Chili.....				
South America, on the Pacific, exclusive of Chili.....	4			
Cape Colony, with Natal.....				
Africa, on the Atlantic.....				
Africa, on the Indian Ocean.....				
Asia, on the Mediterranean and Black Seas.....				
East India and East Indies.....				
China.....				
Japan.....				
The rest of Asia.....	4		2	
Australia and Pacific Islands.....				
Total of non-European countries.....				
RECAPITULATION.				
Germany	1		77	2
The rest of Europe.....	4		2	8
Non-European countries.....	5		79	
Vessels with cargo.....				10
Vessels in ballast.....				

TABLE NO. III.—*Sea-going vessels arrived.*

Arrived.	1885.		1886.		1887.	
	Ves- sels.	Registered tons.	Ves- sels.	Registered tons.	Ves- sels.	Registered tons.
From German ports.....	1,338	198,262	1,468	197,801	1,755	229,634
From Great Britain (coalers).....	776	538,076	815	558,325	809	555,292
From Great Britain (other vessels).....	2,076	1,259,184	2,046	1,282,110	2,036	1,287,355
From other European ports.....	1,536	666,438	1,605	742,171	1,680	743,217
From America.....	886	868,469	823	848,920	836	894,763
From Africa.....	71	58,198	60	50,882	64	59,144
From Asia and Australia.....	107	115,485	96	111,783	128	150,829
Total.....	6,790	3,704,112	6,913	3,791,992	7,308	3,920,234
Among which were—						
Vessels with cargo.....	5,856	3,443,645	5,920	3,526,955	6,338	3,697,304
In ballast.....	934	260,467	993	265,037	970	222,930
Sailing vessels.....	2,312	607,182	2,259	588,366	2,535	633,082
Steam-ships.....	4,478	3,096,930	4,654	3,203,626	4,773	3,287,152
Percentage of sailing vessels.....	34.1	16.4	32.7	15.5	34.7	16.1
Percentage of steam-ships.....	65.9	83.6	67.3	84.5	65.3	83.9
Average loading capacity of sailing vessels.....		263		260		250
Average loading capacity of steam-ships.....		692		688		689

Sea-going vessels departed.

Sailed.	1885.		1886.		1887.	
	Ves- sels.	Registered tons.	Ves- sels.	Registered tons.	Ves- sels.	Registered tons.
For German ports.....	1,246	138,763	1,276	148,278	1,592	176,023
For Great Britain and Ireland.....	3,059	1,982,059	3,032	1,948,878	3,131	2,030,065
For other European ports.....	1,441	555,157	1,511	598,586	1,549	605,996
For America.....	826	820,226	867	880,387	876	926,025
For Africa.....	96	71,976	89	63,427	85	71,531
For Asia and Australia.....	130	144,213	131	147,289	105	118,225
Total.....	6,798	3,712,394	6,906	3,786,845	7,338	3,927,865
Among which were—						
Vessels with cargo.....	5,142	2,895,489	5,320	2,985,020	5,564	3,093,147
Vessels in ballast.....	1,656	816,905	1,586	801,825	1,774	834,718
Sailing vessels.....	2,315	616,721	2,264	592,901	2,563	635,137
Steam-ships.....	4,483	3,095,673	4,642	3,193,944	4,775	3,292,728
Percentage of sailing vessels.....	34.1	16.6	32.8	15.7	34.9	16.2
Percentage of steam-ships.....	65.9	83.4	67.2	84.3	65.1	83.8

TABLE NO. IV.—*Value of imports into Hamburg.*

Seaward from—	1885.	1886.	1887.
	Marks.	Marks.	Marks.
Non-European countries.....	356,395,170	344,800,270	416,588,520
Great Britain and Ireland.....	394,176,400	394,594,220	417,145,140
The rest of Europe.....	182,460,560	197,427,650	215,349,600
Total.....	933,032,130	936,822,140	1,049,083,260
From and via Altona.....	58,505,910	53,109,360	59,523,980
Seaward, including Altona.....	991,538,040	989,931,500	1,108,607,240
	689,073,170	734,005,220	789,732,090
	240,960,210	228,169,330	241,742,950
	225,499	128,609,910	145,673,770

AGRICULTURE, INDUSTRY, AND TRADE IN SILESIA.

EXPORTS.

The return of declared exports from this consular district to the United States for the fiscal year ending June 30, 1888, showed an increase of \$314,382.51 over the exports of the preceding twelve months, although one of the principal articles of export for the last few years, beet sugar, has not been shipped to the United States from this district since the September quarter, 1887. In linen and cotton fabrics the increase was \$212,866.26; in woolen cloths, \$61,724.98; in silk-mixed umbrella stuffs, \$112,624.76; in porcelain ware, \$32,492.92; and in cellulose and wood-pulp, \$25,813.07.

THE CROPS.

The cereal crops of 1888 have fallen below those of 1887, both in quality and quantity of grain, as also of straw, owing, in a great measure, to the cold and wet weather of May, June, and July, and to the wide-spread inundations of August. Sugar-beets promise a fair yield, and of potatoes a greater amount will be produced than last year, but it is feared that the rot, which has appeared in a number of places, will diminish the value of the tuber crop. Of both clover and meadow hay, less was gathered than last year. The estimates for 1888 are as follows: Wheat, 90 per cent.; rye, 75; barley, 82; oats, 89; potatoes, 95.40; clover hay, 78.91; and meadow hay, 76.34. In 1887 wheat returned 98 per cent. of a good crop; rye, 93; barley, 96; oats, 86; potatoes, 81; clover hay, 100; and meadow hay, 96. The average price of wheat during 1887 was: White, \$1.98 per hundred-weight; yellow, \$1.90. Rye, \$1.48. The wholesale price of wheat flour during the year averaged \$2.88 per hundred-weight, exclusive of sack; rye flour, \$2.28.

CHAMBER OF COMMERCE OPINIONS.

The chamber of commerce annual reports all concur in the opinion that the year 1887, so far as the material prosperity of tradesmen, manufacturers, and agriculturists is concerned, was no improvement on its predecessors. Individual reports made to the Breslau chamber during the year establish the fact that a number of branches of trade and industry were more active during a part, at least, of 1887 than they had been for some time past; but this improvement brought better prices, and was of some duration only in a few cases. By means of conventions to regulate prices and limit production some of the larger industries have succeeded, however, in placing themselves upon a better basis. But the lesser industries, the middle-men, and the retailers, continue to complain of overcompetition and depressed prices. Stimulating reports from abroad, and the fear of a fresh increase of the import duty upon breadstuffs, animated the grain trade in the second quarter of the year, but the transactions here remain within narrow bounds, and although the German markets were overloaded with foreign grain, the

new duties went into effect very little of it was brought into this province. Linen and cotton mills were enabled to keep their operatives employed during the entire year, but the complaints of the manufacturers that the margin for profit is very small must be conceded to be well-grounded. The linen spinners have been obliged to make occasional abatements in prices in order to effect sales, while on the other hand the cotton spinners, at least in the early months of the year, and so long as their supply of the raw material lasted, were working at a fair profit. The iron industry succeeded in placing itself upon a better footing in 1887. The establishment of an "Upper Silesian League for Joint Sales" and the "General German Syndicate" contributed materially to this result. These combinations are not intended to limit production, but rather to fix the amount which may be sold by individual works during a given period. By this means, however, overproduction is prevented and prices are kept within paying limits.

According to the Liegnitz chamber of commerce neither the industrial, commercial, nor agricultural population of Lower Silesia has reason to be elated with the results of the year 1887. The constant tendency to raise the duty on imports has latterly confined the export field to Austria-Hungary, Spain, the United States, and Australia. In grain little business has been done except with domestic millers. The potato starch factories produced the same amount as last year, and disposed of it at the same prices. The sugar factories worked 25 per cent. less beets than in the previous year, and realized a fair profit owing to the saccharine quality of the beets. At the beginning of the year raw wool took an upward turn, but soon receded again in consequence of the prevailing fear of war. The woolen cloth industry languished from the same reason. The wool hat manufacture was confined mainly to the production of a cheaper sort, suitable for certain parts of Germany and for export to Japan, Calcutta, and the La Plata states.

The Liegnitz board of trade report is pitched in a still more lugubrious key. No one, it declares, has prospered from the pursuit of agriculture alone, while many farmers have been living partly on the earnings of former years, and others have been aided by the loans at low interest now so easily obtained. It can not be denied that in the last decade the agriculturists have not held their own, and that in the better localities the gain from land is one-third less and in the poorer localities one-half less than in former years. The land has even decreased in value from 20 to 25 per cent., as compared with twenty or twenty-five years ago. In spite of this a decrease in the number of work-people or a reduction of wages has not taken place; in individual instances even a slight increase has been obtained by the employés. A bad symptom among the open-air workers is the steadily increasing consumption of alcohol.

Wool opened at the beginning

political reasons, scarcely any orders are now received. Holland and Scandinavia still take large supplies, but trade with Greece and Turkey is almost at a stand-still. Sales of silk-mixed fabrics for umbrella makers were not so large as had been expected. (Of this Gorlitz specialty, the exports to the United States, during the calendar year 1887, amounted to \$273,670.72.) The flour mills have now for some years worked only for the home demand.

In Sorau, according to the chamber of commerce, the high hopes entertained by the textile manufacturers were fully realized in the second half of the year. As regards the linen and cotton industry in particular, increased consumption at home and an active demand from the United States gave the weavers ample employment, even the house hand-loom weavers not losing by the rivalry of the factory power looms. Damasks, table linens, and towelings were the chief articles of export to the United States. Flax spinning, however, owing to the sinking of the prices of flax yarns, was not remunerative; the cotton spinners, on the contrary, had no reason to complain.

GERMANY'S GRAIN IMPORTS.

The excess of cereal imports over exports were—

Year.	Cwt.
1884.....	523,175.66
1885.....	427,741.02
1886.....	171,331.02
1887.....	396,681.38

The principal sources of supply were, as formerly, Austria-Hungary, Russia, and the United States. By improving her transportation facilities Russia has increased her grain export to Germany, but Austria still leads in the supply of barley. The export of German potatoes has fallen off greatly, England taking but a limited amount compared with formerly, and the shipments to other countries being only sporadic and not in great amounts. The bulk of the crop has, therefore, in recent years been converted into alcohol and starch.

In the first half of the calendar year 1888 the imports into the Empire were as follows:

	Cwt.
Rye.....	1,891,636
Wheat.....	2,225,702
Oats.....	1,322,816
Buckwheat.....	157,076
Barley.....	2,602,592
Maize.....	556,902
Malt.....	626,116
Bran and rice waste.....	3,233,670

PRODUCTS OF MINES AND FURNACES.

The amount of coal mined in Silesia during the year was 16,187,078 tons, against 15,996,326 tons the previous year. There were sold 14,678,972 tons, yielding \$2,206,000.

Ores were produced as follows:

	Tons.	Value.
Iron.....	650,731	\$606,943
Zinc.....	722,018	1,318,945
Lead.....	28,697	875,077
Arsenic.....	323	4,732
Sulphur.....	6,327	16,547

The products of the smelteries were:

		Value.
Charcoal pig-iron.....	tons.... 831	\$24,033
Stone-coal and coke pig-iron.....	do..... 392,600	4,461,542
Spelter.....	do..... 82,643	5,423,190
Pig-lead.....	do..... 22,279	1,214,015
Litharge.....	do..... 2,879	158,988
Precipitated copper.....	do..... 60	114,715
Silver.....	kilos... 12,370	387,290
Gold.....	do..... 0.7527	490
Cadmium.....	do..... 7,310	11,542
Arsenic.....	do..... 474	21,792
Sulphuric acid.....	tons... 42,162	373,846
Copperas, vitriol.....	do..... 1,491	16,099
Ocher.....	do..... 84	1,257

Just before the increased duties on iron imported into Russia went into effect in May, 1887, large quantities of pig-iron were sent to that country from Upper Silesia, the price being about 58 cents per hundred-weight. In June of the same year a syndicate purchased the supply on hand, together with the entire output for the rest of the year at 56 cents per hundred-weight. A remarkable simultaneous explosion of all the boilers in one of the most extensive works having placed three large furnaces out of operation, the syndicate raised the price of pig-iron so enormously that consumers were obliged to combine also, and the purchase of large amounts of ore abroad and the blowing-in of two new furnaces soon brought the syndicate to terms. For 1888, however, the "League of Upper Silesian Rolling-Mills" agreed to take all the pig-iron made for sale in the district at a uniform price of $59\frac{1}{3}$ cents per hundred-weight. The prices for pig-iron, as well as rolled iron, were thus fixed at a remunerative rate for a year at least.

At the end of last year there were only twenty-two zinc-ore mines worked in Silesia, against thirty at the end of 1886. One of the disused mines was (not more than fifteen years ago) one of the most productive sources of calamine in the province. The twenty-two mines left working employed the same number of work-people, however, as the thirty did in the previous year. The production of both calamine and blende was greater than in

The production of spelter in Upper Silesia was nevertheless about 200 tons less than in 1886, being limited by conventions with the other zinc producers of the continent and England. Twenty smelteries produced 82,608 tons. In the first half of the year the prices, owing to war rumors and other causes, were greatly depressed, but about midsummer rapidly advanced, and large orders from England in November and December brought them up to \$4.78 per hundred-weight, delivered at Breslau. To-day it can be bought at \$4.12, delivered at the works.

Lead experienced little change in the early part of the year, falling, however, gradually to \$2.70 per hundred-weight, from which price it soon recovered. In December, a lead syndicate having been formed, the price rose rapidly until it reached \$3.57 per hundred-weight.

The Silesian zinc rolling-mills produced 28,000 tons of sheet-zinc during the year. Sheet-zinc not being favored with the low freight rates enjoyed by the metal in its raw state, and the transportation by water being seldom practicable, the western manufacturers and producers continue to have a great advantage over those of Silesia in the world's markets.

BEET SUGAR.

In the production of raw sugar the Silesian factories consumed 22,153,750 hundred-weight of beets, 8.32 hundred-weight of beets producing 1 hundred-weight of sugar. The amount of beets consumed by all the sugar-mills in the Empire was 166,133,424 hundred-weight (against 208,053,736 hundred-weight two years previously), and the total amount of raw sugar produced, 19,968,158 hundred-weight. The total imports of sugar were 63,914 hundred-weight; total exports 12,767,794 hundred-weight.

GLASSWARE.

Colored and decorated glassware manufacturers kept their workmen employed nearly the entire year. Prices, however, remained depressed. The export to the United States was active, but the competition of Bohemian glass-makers, whose labor and material are cheaper, prevents any considerable expansion of the export trade.

PETROLEUM.

The fluctuations in the price of American petroleum were, in some instances, disastrous to wholesale dealers here, but the low prices ruling during the summer had the effect of inducing a greater number of large transactions than were made in the previous year. Prices varied from \$6.07 per 100 kilograms (2 hundred-weight) in January and December to \$5.24 in May and October. The import of Caucasian petroleum into Silesia, under the name of "Nobel petroleum," amounted to about 800 tank cars, holding 52,000 barrels, or 8,000,000 kilograms. The prices varied from \$1.98 to \$2.38 per 100 kilograms net at Russian frontier, and from \$4.82 to \$5.48, freight and duty paid, in Breslau. Of the tank cars that crossed the frontier

VEGETABLE OILS.

The rape-seed and linseed oil factories have been well supplied with raw material up to the beginning of the present fiscal year, and the demand for their products has been fair. The oil mills in this city, which have formed a combination, produced in 1887 and 1888 116,300 hundred-weight of oil and 189,200 hundred-weight of oil-cake; 322,000 hundred-weight of oil seeds were consumed. The net earnings were \$57,152. Rape-seed oil from these factories is exported to the United States.

ODER RIVER COMMERCE.

The principal articles of river transportation were:

From Breslau.	Cwt.	To Breslau.	Cwt.
Coal	4,500,410	Chemicals.....	104,100
Chemicals.....	28,046	Petroleum.....	381,075
Iron, all descriptions.....	37,697	Resin, etc	36,670
Zinc, in plates and rolled.....	359,155	Iron, all descriptions.....	174,898
Lead	80,840	Grain.....	95,050
Grain	234,035	Oil and oil-cake.....	3,500
Oil and oil-cake.....	66,731	Flour.....	7,100
Mill manufactures	304,170	Roofing paper.....	10,810
Malt.....	17,840	Stone and brick	404,930
Alcohol.....	133,100	Wood.....	50,410
Sugar	677,740	Pyrites	335,603
Molasses	80,625	Herrings.....	35,950
Stone, brick, etc	27,800	Salt	14,680
Wood	18,820	Cotton.....	1,500
Resin, pitch, tar	500	Miscellaneous.....	1,877,908
Miscellaneous.....	339,160		

As river freight down stream there was sent in addition 355,778 tons of goods brought hither by rail and transshipped a few miles below Breslau. This consisted mainly of coal, spelter, raw sugar, lead, iron, barley, malt, cellulose, sheet-zinc, flour, staves, rape-seed, stone, bran, oats, alcohol, cement, sugar beets, etc.—BRESLAU, *September 8, 1888.*

HENRY DITHMAR,
Consul.

EXPORTS AND IMPORTS OF THE RUSSIAN EMPIRE.

The following is a summary of a recent report of the Russian ministry of finance on the exports and imports of the Empire, published in the Journal de St. Petersburg of August 25, September 6, 1888:

Information furnished by the Journal du Ministere des Finances, relating to the current year, has elicited comments from

mated at 144,138,000 rubles, have been less than those of last year by 9,552,000 rubles, that is 62 per cent. The improvement shown these last years in our commercial statement has never before been so marked, our exportations during the six months having exceeded our imports by 204,000,000 rubles, that is, by nearly 150 per cent.

"This increase in exports has taken place chiefly during the last three months, the difference in favor of the current year having been: in April, 27,000,000; in May, 32,700,000; and in June, 30,000,000. The greatest increase has been noticed in the exportation of alimentary products, especially of cereals, of which, in these six months, 83,600,000 more than during the first six months of last year, have been exported. After these come raw materials and half-worked articles (increase of 19,700,000 rubles). The exportation of manufactured articles has also increased by 66 per cent., from 4,777,000 rubles. The exportation of cattle has more than doubled (6,324,000 instead of 3,065,000 rubles).

"Excepting in the month of February, when there was a slight falling off, the exportation of alimentary products has steadily increased during these six months. In January the increase in this group of products showed 7,750,000 rubles; in March, 10,500,000 rubles; in April, 21,000,000 rubles; in May, 23,333,000 rubles; and in June, 21,500,000 rubles. Cereals held the first place—in six months, exports to the value of 198,670,000 rubles, instead of 118,500,000 rubles in 1887, 76,500,000 rubles in 1886, 147,250,000 rubles in 1885, and 136,000,000 rubles in 1884. Thus the exportation of cereals during the first six months of the present year leaves far behind it that of a series of former years.

"The only decrease in exportation was in maize, buckwheat, and sorghum. The exportation of wheat increased three-fold; that of oats, compared with that of last year, doubled, and compared with 1886 is six times as great. Almost the same may be said of barley. Of rye, only 5.6 per cent. more; of 12 per cent. less value (3,000,000 rubles). The price of rye fell more than that of any other product. The exportation of bran doubled, compared with that of 1887, and tripled with that of 1886.

"The increase in the exportation of wheat is due to the demands from England, France, and Belgium, while Austria-Hungary ordered none. Holland takes the lead in the orders for rye, even over Germany, since last year. In 1888 barley is sent in large quantities to France, whereas before the demand was insignificant. Germany ordered more than ever. Oats were in greater demand in all the countries where it was sold until now. An increase is also to be pointed out in the exportation of eggs, which, representing a value of 2,500,000 rubles in 1886, and of 3,500,000 rubles in 1887, reached 6,500,000 rubles in 1888; as also a greater demand for meat, caviar, and preserves of all kinds.

"In the group of raw materials and half-worked articles, there was a greater exportation of flax—3,250,000 poods (the pood, 36 pounds) in 1886, 5,333,000 in 1887, 7,800,000 in 1888. The value increased in the same proportion for the three years—17,700,000, 29,300,000, and 42,300,000 rubles. Flax-seed was also exported in larger quantities than before, as almost every other kind of oleaginous seed. The exportation of naptha also made progress—1,200,000 poods in 1886, 1,500,000 in 1887, and 1,900,000 in 1888. Silk and bones, on the other hand, fell off, as also unworked metals, but the value of metals exported increased compared with the preceding year. Although the quantity of metals exported decreased from 73,000 to 27,700 poods, in value they increased from 627,000 to 700,000 rubles.

"In the group of animals the exportation of horses gained the most—in 1887 it represented only the value of 500,000 rubles, while this year it amounted to 3,000,000. In number, also, there were three times as many horses exported as during last year. The exportation of poultry and of game doubled.

"As to manufactured articles, the exports increase from year to year. During the first six months of 1885 the value of these exports was but 2,686,000 rubles, whereas in 1887 it already amounted to 7,293,000 rubles, and in 1888 it reached 12,064,000 rubles. The greatest increase is remarked in the exportation of articles in linen, clothing, and fur coats, weaker stuffs, linen cloth, and silk articles in leather and metal, and in the exportation of

"It is altogether different with the imports—a slight increase of 780,000 rubles in the group of manufactured articles, in every other case a considerable diminution. The importation of alimentary products decreased by 3,617,000 rubles, compared with 1887. That of tobacco decreased more than one-half, without counting that the value declined still more, falling from 1,829,000 rubles in 1887 to 671,000 rubles. That of imported drinks fell also from 4,432,000 rubles in 1886 to 3,305,000 rubles. Less salt, herrings, cod-fish, oranges, lemons, and other fruits were imported. Without counting vegetables and bread, colonial products increased in importation, as also tea, although the value of the latter decreased. By the European frontier 100,000 poods of tea were imported in the six months, against 89,000 poods in the corresponding period of last year. By the custom-house at Irkoutsk tea was imported as follows: 637,000 poods in 1887; 570,000 poods in 1888.

"The reduction in the importation of raw materials and of half-worked articles amounts this time, compared with the first six months of 1887, to 6,687,000 rubles. In the last year cotton has chiefly contributed to this reduction. In 1887 5,180,000 poods were imported, to the value of 49,465,000 rubles; in 1888 only 4,251,000 poods, valued at 41,834,000 rubles.

"Coal and coke also were imported in less quantities. Cast-iron decreased as follows: instead of 5,130,000 poods in 1887, only 493,000 poods in 1888. It is the same with most of the other metals, as also with vegetable oils. There was an increase in the importation of silk, wool, cotton goods, articles in wood, manures, steel, zinc, indigo, sulphur, etc.

"The importation of cattle diminished by 37,000 rubles. On the other hand, articles in gold and silver, cast-iron, steel, machinery, and tools (especially of agricultural implements), linen, and hemp, as also carriages, books, and watchmakers' goods, were imported in larger quantities than before."

SUGAR AND RICE IN THE FIJI ISLANDS.

The culture and manufacture of sugar is one of, if not the most important industry of this colony, more capital being invested and more labor employed in the sugar industry than in any other branch of business in this group, except, perhaps, cocoa-nuts, which possibly claim a larger investment of money.

There are eleven mills here manufacturing sugar. There are a few small plantations on the rivers, where the cane can be shipped to the mills by boats, that grow cane and sell their crop to the mills.

After careful inquiry from all available sources I have prepared the following table, giving the amount of sugar made, the number of acres of cane required for the output, and the total acreage under cane cultivation:

Mill.	Owners.	Sugar.	Acres required.	Acres under cultivation.
		<i>Long tons.</i>		
		2,000	1,500	2,000
Ba	New Zealand Sugar Company	500	650	812
Denba	Wilson Brothers	15	24	48
Dreketi	J. B. Simmonds	375	248	304
Ellington	Mortgage and Agency Company	360	400	600
Holmhurst	Tavinni Sugar Company	1,407	1,085	1,200
	Rewa Sugar Company	750	600	800
	Island Company			

The above gives the amount of sugar shipped out of this colony. There is a local consumption of about 300 tons which is not included in the above table. There are in this colony 110,000 natives, 5,000 coolie Indians, 2,000 Polynesians, and about 2,000 white or Europeans; making a total of 119,000 souls.

I find an average local consumption of $5\frac{1}{7}$ pounds per capita. But this is not a correct showing, for the reason that the white population use much more than the general average, and the natives very much less than either of the others named. I will add that local consumption is rapidly on the increase.

As to the methods of cultivation, it is as varied as possible between the limits of properly preparing the land and cultivating a crop upon the best principles and simply digging a hole in the ground with a sharp stick, putting in a plant, and then leaving it to the care of nature for the furnishing of the crop. The results are as might be expected. Proper cultivation is sure to give good returns. The contrary, while not a failure, owing to the soil and climate, is not profitable.

Averaging, as well as I am able from the data obtained, I find about 15 tons of cane is raised from 1 acre of ground, at a cost of nearly or quite £8 (\$38.93). Also that 10 tons of cane are required for 1 ton of sugar. The amount of cane for the ton of sugar varies in different localities in the group.

At Penang and Ba the average is the best, being about 8 tons of cane for one of sugar, while at Nansori, Koronivia, and Tamanoa it requires from 10 to 13 tons of cane for the same amount of sugar.

All of the sugar made here finds a ready market at Melbourne and Sydney, Australia, and in Auckland, New Zealand. The prices at the different places for the last year were the same, and as follows:

Class A, first white.....	£20.10...	\$99.75
Class B, bright yellow.....	15.00...	73.00
Class C, counter.....	14.5.....	68.38
Class D, coarse.....	11.5.....	54.73

The larger firms ship in their own vessels, Ba sending her output to Auckland, and Nansori, Koronivia, and Tamanoa to Sydney. The other mills ship by the United States Steam-ship Company's steamers that make regular trips between colonial ports and this group and furnish ample accommodation for carrying their product. They charge £1.10 (\$7.30) special rates to either of the ports named.

The price paid for sugar at the mills for local consumption is £21.10 (\$104.63) for class A, and £16 (\$77.86) for class B. The other grades are all exported. There are no taxes upon sugar or cane lands. Sugar machinery of all kinds is exempt from duty.

As to rice, experiment has demonstrated the fact that rice can be grown at a profit in some of these islands, but as yet it has only been grown as an experiment. A duty of £2 (\$9.73) per ton is collected upon all rice imported.—LEVUKA, FIJI, August 3, 1888.

AGRICULTURAL MACHINERY IN VICTORIA.

From January 1, 1888 to the 15th inst., there have passed through the custom-house of this port agricultural machinery to the declared value of \$12,139, and upon this value duties were levied of 35 per cent., except in cases of shovels and spades.

Report of the imports (from January 1 to September 15, 1888,) into British Columbia of agricultural machinery from the United States, landed at the port of Victoria, B. C.

No. of machines.	Description of machines.	Declared total value.	Custom-house value.	Rate of duty.	American makers' prices,* as compiled from catalogues.	Prices at which machine is sold in Victoria, B. C.
				<i>Per cent.</i>		
3	Twine binding attachments.....	\$600	\$600	35	\$210 to \$225.00	\$250 to \$260.00
47	Hand seed grain drills.....	355	355	35	7.50	9 to 17.50
16 doz.	Forks (hay, straw, manure, and spading).....	146	146	35	.....	per doz., 15.00
	{ Harrows..... }	915	915 {	35	18 to 27.00	35.00
48	{ Seed-drills..... }			35	90 to 145.00	75 to 115.00
				35	210 to 225.00	260.00
12	Self-binding harvesters.....	2,020	2,020	35	.....	.....
223	Hoes (garden and corn).....	77	77	35	.....	.....
10	Knives (hay and corn).....	19	19	35	80.00	85 to 90.00
21	Mowing-machines.....	1,197	1,197	35	70 to 95.00	60 to 107.50
	{ Sulky plows..... }	1,176	1,176 {	35	10 to 24.00	20 to 25.00
121	{ Walking plows..... }			35	† 35 to 37.50	† 45.00
487	Rakes, steel (horse and hand)..	562	562	35	125 to 130.00	120 to 150.00
2	Reapers.....	275	275	35	.....	.....
240	Scythes (cast-steel).....	96	96	35	.....	.....
4,870	Shovels and spades.....	2,473	2,473	\$1 per doz. and 25	.....	.....
				35	.....	.....
.....	Parts of machinery for repairs..	2,228	2,228	35	.....	.....
		12,139	.....	.....	.....	.....

* Less 25 per cent. discount; terms, ninety days.

† Horse-rakes.

The consular agent at Vancouver, in response to my note of inquiry, reports:

There have been no agricultural implements entered at the customs of this port from the United States since Vancouver has been made a port of entry — fifteen months. At the port of Westminster there have been entered six plows only, from San Francisco, Cal., during the past twelve months — one plow valued at \$27 and five plows valued at \$32 each; total value, \$187.

The agent at Nanaimo reports “nothing.” The small demand there is supplied from this town.

There are four firms of iron-mongers in this city dealing more or less in agricultural implements, viz: Messrs. E. G. Prior & Co., Marvin & Tilton, Nicholles & Renouf, and Matthews, Richards & Fye.

The selling prices here are: Mowers, \$85 to \$90; harvesters, \$100 to \$120; shovels, etc., \$75 to \$115; har-

Messrs. Nicholles & Renouf give as a summary of their trade in agricultural implements manufactured in the United States for the past five years, \$1,000; add duty at 35 per cent., \$350; total \$1,350. Selling value estimated at \$1,700. They say, "An appreciable quantity of this class of goods comes from Detroit, Mich., and does not appear in the customs record of British Columbia. Much of our trade of this kind is supplied from Montreal, but frequently when hurried we send the order to Portland, Oregon."

The same may be said as to the other dealers. Mr. Prior noted that he had received double the number of harvesters given on my list obtained from the customs official. They came over the Canadian Pacific Railroad, and record of them is only obtainable at the remote customs station. He says, however, that the entire amount of American agricultural machinery imported here, though not large, is considerable as compared with that of other origin.

It is only within three or four years past that modern agricultural machinery has had a market here of any importance, but it is increasing yearly. Naturally the larger part of it sold here comes from Eastern Canada.

Says Mr. Marvin (of Marvin & Tilton), who is the vice-consul: "The high duty shuts out nearly all kinds of agricultural machinery. Many American manufacturers have branch establishments in the Dominion, thus being able to compete with the other parties engaged in the same branches of trade. This is more particularly the case with mowing and reaping machines."

The custom-house value is the invoice value, and the rate of duty upon all agricultural implements and parts thereof is 35 per cent., excepting shovels and spades, which pay a duty of \$1 per dozen and 25 per cent. ad valorem. There is no duty charged upon the cases in which such machinery is packed. The Dominion has endeavored to foster agriculture in the province by provision for two experimental farms, one of which, but recently commenced, is at Agassiz on the main-land; the other will be established at some point on this island. The Vernon farm, belonging to Forbes Vernon, of the provincial ministry, is said to be about 10,000 acres, principally devoted to stock raising.

The foregoing, and the project formed four years ago of a "beef syndicate," to occupy and improve a tract of about 25,000 acres for raising beef, are the only extensive enterprises in the line that I have heard of. Of the present status of the syndicate I am unaware.

There are no exports of cereals or of any farm produce from this province as yet. No statistics showing the amount of arable land in the province are obtainable. The farming industry of the province as compared with its other resources is small, and is also limited by the small portion which, as believed, is tillable soil, in all its vast area; and very little of this small portion lies in one body.

On the main-land, in the Frazer River Valley and the Chilliwack district, and also about Okanagan, there are farms in addition to those already described, but none of these latter are large, though fertile, producing some-

unexplored, in the Cowichan, Quamichan, and Saanich districts, and about Comox, some 25 miles beyond Nanaimo, there are numerous small farms. The British Columbia Directory—a very creditable work—gives only 1,711 names as farmers in the entire province. Many of these do not hire a single hand, and but few have more than three hired men. Chinese and Indians find employment occasionally.

Much more of the province is suitable for stock raising, but its principal wealth lies in its mines, forests, and fisheries.—VICTORIA, BRITISH COLUMBIA, *September 20, 1888.*

ROBT. J. STEVENS,
Consul.

EXPORTS FROM MUNICH TO THE UNITED STATES.

Following is a digest of the invoice books of the consulate at Munich, Bavaria, for the four quarters of the year ending September, 30, 1888:

Following is a digest of the					
four quarters of the year ending September, 30, 1888:					
Articles.	Quarter ending—				Total for the year.
	December 31, 1887.	March 31, 1888.	June 30, 1888.	September 30, 1888.	
MUNICH.					
Artificial flowers.....	\$4,363.53	\$2,740.05	\$1,964.12	\$4,083.64	\$13,151.34
Beer	1,132.57	1,629.53	1,621.57	1,370.54	5,754.21
Books and journals	2,551.36	2,132.12	4,981.82	3,498.60	13,163.90
Bronze powder	6,368.17	7,024.13	829.94	10,550.98	24,773.22
Chromos	2,592.05	3,288.89	4,487.05	5,757.34	16,125.33
Dried prunes	44,125.75	48,986.47	36,892.18	7,491.71	137,496.11
Dry colors.....	6,745.42	6,865.52	6,460.20	3,329.43	23,400.57
Glass paintings	23,182.04	7,442.71	2,357.56	8,899.90	41,882.21
Gloves	14,846.93	25,011.63	17,014.94	45,787.62	102,661.12
Lithographic stones.....	3,456.40	5,033.34	1,631.64	4,092.12	14,213.50
Metal paper.....	7,936.43	10,307.58	7,303.77	10,510.01	36,057.79
Oil paintings.....	38,716.29	19,671.13	7,039.79	44,285.93	109,713.14
Photographs	1,344.07	2,785.45	2,072.58	2,826.47	9,028.57
Stained glass	11,453.87	4,152.29	1,368.18	.....	16,974.34
Statuary	11,347.32	8,429.28	7,608.77	13,220.50	40,605.87
Sundries	8,495.87	7,604.72	5,281.17	11,531.01	32,912.77
Total in United States gold.....	188,658.07	163,104.84	108,915.28	177,235.80	637,913.99
AUGSBURG.					
Books and music.....	.....	.....	5,405.58	12,515.54	17,921.12
Chromos	7,891.68	6,651.34	.....	.....	14,543.02
Cotton thread	3,659.50	6,295.45	4,144.90	2,768.39	16,868.24
Mathematical instruments.....	3,031.18	3,284.92	3,119.25	4,458.19	13,893.54
Metal paper.....	4,736.20	6,745.57	4,714.42	4,969.98	21,166.17
Musical instruments.....	1,372.33	733.40	3,955.57	1,421.05	7,482.35
Springs	2,561.53	2,051.35	984.23	2,281.12	7,878.23
Sundries.....	9,821.38	4,690.96	5,348.50	7,988.54	27,849.38
Total in United States gold.....	33,073.80	30,452.99	27,672.45	36,402.81	127,602.05
			26,587.73	213,638.61	765,516.04

CANADIAN EXPORTS TO THE UNITED STATES.

Exports from the consular district of Port Stanley and St. Thomas to the United States during the year ended June 30, 1888.

Articles.	Quarter ending —				Total for the year.
	September 30.	December 31.	March 31.	June 30.	
Apples, green and dried.....		\$38,185.53	\$10,113.92		\$48,839.45
Barley	\$4,663.90	22,033.47	7,730.65	\$2,110.00	36,588.02
Beans.....		2,491.40	873.00		3,364.40
Bran.....	1,191.00				1,191.00
Breeding animals	2,941.00	1,005.00	6,077.00	2,129.00	12,152.00
Cattle.....	12,004.00	16,734.95	4,373.00	4,397.00	37,509.55
Eggs.....	8,866.20	12,862.85	2,582.64	429.60	24,741.29
Flax and tow.....		4,072.50	2,391.20	3,686.30	10,150.00
Hides.....	4,341.00	7,756.25	7,518.19	7,243.87	26,859.31
Horses.....	7,540.00	4,080.00	20,607.50	11,422.50	43,650.00
Lumber	4,637.50	3,552.13	6,679.40	7,432.26	22,302.35
Malt	1,449.45				1,449.45
Oil (petroleum) and products	1,793.77	2,162.27	2,444.39	2,904.82	9,305.25
Personal effects of emigrants.....	7,997.00	12,392.65	10,685.05	9,029.35	40,104.05
Potatoes and turnips.....		150.00	2,101.30	793.00	3,044.30
Poultry		1,414.28	391.41		1,806.19
Scrap-iron, steel, and brass.....	1,639.61	2,388.31	161.20	719.16	4,908.28
Sheep and lambs.....	22,492.45	45,969.00	5,273.75	352.70	74,087.90
Staves, heading, hoops, bolts, etc.	80,219.06	49,424.12	17,172.73	58,081.15	204,897.06
Telegraph poles and piling.....	2,032.40	194.20		101.25	2,327.25
Wheat	2,750.00				2,750.00
Wood, fire	4,350.00	2,073.90	2,298.50	5,084.00	13,806.40
Wool.....	4,306.32				4,306.32
Miscellaneous	953.50	150.00	665.95	380.42	2,149.87
Total	176,168.82	216,809.53	110,140.79	116,296.38	619,415.52

Exports from the consular district of Quebec to the United States during the year ended June 30, 1888.

Articles.	Quarter ending —				Total for the year.
	September 30.	December 31.	March 31.	June 30.	
Animals.	\$3,702.60	\$7,127.30	\$480.00	\$1,379.05	\$12,688.95
Bark, hemlock	4,800.00			1,760.00	6,560.00
Balsam, fir.....	1,734.75	816.90			2,551.65
Furs	2,605.30	518.96	2,449.95	6,294.04	11,868.25
Fish	4,093.70	34,799.91			38,893.61
Glue stock.....	440.40	1,101.46	1,161.35		2,703.21
Household goods	3,583.20	4,790.00	3,034.00	9,160.80	20,568.00
Hair	360.00	3,018.25	1,020.00	2,428.32	6,826.57
Hides	1,423.06	406.00			1,829.06
Indian goods	244.40	1,589.60			1,834.00
Lumber	108,835.41	80,052.25	39,656.40	58,024.44	286,568.50
Miscellaneous.....	3,602.96	5,440.47	3,965.89	4,410.04	17,419.36
Produce and provisions			26,693.09	26,792.32	53,485.41
Paper stock.....	1,347.00	900.00		2,730.00	4,977.00
Returned goods.....	1,469.96	270.01			1,739.97
Sugar, maple.....	14,620.33	1,632.73			16,253.06
Tobacco			2,078.63		2,078.63
Total	152,862.07	142,462.84	80,520.21	112,070.01	488,915.13

SUMATRA TOBACCO.

For some years last past, up to the commencement of 1888, the article of Sumatra tobacco attracted such general and constantly increasing attention in international markets that it appears to me certain not unimportant changes touching the quality and quantity of last year's production, as well as the sales of same, as far as proceeded, deserve to be reported, as many parties in the United States may appreciate the information. The yield of the crop of 1887 shows a decrease, compared to the quantity grown in 1886.

According to the estimates of it, which I believe to be about correct, it amounts, in round figures, to 130,000 bales in 1887, as against 130,512 bales in the preceding year, being a falling off of about 10,000 bales more or less from the quantity raised in 1886.

The quality of last year's crop shows a considerable deterioration, as compared to former years' products, at least of so much of it as has been placed upon the market up to October 1; whether the balance of it turns out otherwise remains to be seen. Its chief defects or inferiority, as described to me, consist of these: That the many different lots, parcels, or marks contain less tobacco having the peculiar properties on account of which the Sumatra product gained such a high reputation and has hitherto been so much in demand.

This remark applies, in a certain degree, more especially to the color and weight of the goods than to the size and perfection of the leaf or to its burning qualities. In the language of the trade, the leaf of a large portion of the crop is washed and without gum.

The cause assigned for the injury to the tobacco raised in Sumatra last year consisted of excessive rains; neither any change or shortcomings in the condition of the soil nor any neglect in its cultivation are said or claimed to have had anything to do with it.

Up to the 1st of October, or during the first nine months of the current year, there were five of the usual "inscription sales" at Amsterdam, at which 87,429 bales of Sumatra tobacco were offered and very nearly all disposed of. One sale of 5,130 bales took place at Rotterdam during the same period of time. So that, by this time, about 92,559 bales of the crop of the year 1887 have been sold and transferred by the owners and importers of the goods (first hand) to merchants in leaf tobacco and manufacturers of cigars here and elsewhere.

There has not been and is not observable quite the same anxiety and eagerness on the part of buyers of the goods; there is very much less anxiety to that of last and former years. The

American firms are very much less numerously represented at the sales this season than was the case in 1887, which, as explained to me, is partly owing to the important fact that tobacco suitable, in all respects, for the American market is found in only very limited quantities in the crop now under consideration. What most likely will prove more particularly interesting information on the subject to parties in the United States engaged in the cultivation and the trade of the article consists hereof, that the exports of it have so very largely decreased. During the nine months of the current year, or up to September 30, 1888, the quantity of Sumatra tobacco shipped from this consular district to the United States amounted to 10,715 bales, whereas the exports for the corresponding nine months of last year were represented by 18,758 bales, showing a decrease of 8,043 bales in the exports during the past nine months of the current year.

What the purchases for and shipments to American markets will be between now and up to the close of the year can, of course, be but matter of conjecture; but, judging from present indications, I should hardly think the total exports of the year would come up to much more than about half the quantity which was exported in 1887, when it amounted to 35,275 bales. There are now rumors current according to which the product of certain tobacco plantations in Sumatra will in future be consigned to Bremen and be put upon the market there. Diligent inquiry into this matter has satisfied me that although reports to that effect are well authorized and sustained, it would nevertheless seem safe to state that there do not exist, as yet, any justified apprehensions that Holland, and more especially Amsterdam, will lose its prominence as the chief European mart for the article for years to come. But remarkable and general enterprise and energy are vastly becoming proverbial characteristics of the German people, and it would seem to behoove their Dutch neighbors to bestir and exert themselves betimes, and to the utmost, if they would retain their advantage or superiority in the case under consideration, as well as in some other matters relating to commerce, trade, industry, etc.

BORNEO TOBACCO.

A Rotterdam company, engaged in growing tobacco in north Borneo, British, has several hundred bales of the product of its last year's crop now in the market and which will undoubtedly be sold in a few days. The quality of it is very highly spoken of in trade circles, the broker's taxation or valuation of it being 140 cents, Dutch currency, per half kilogram, which is as much, so far this year, as any of the better or best lots or marks of "Sumatra" brought up.

A few days ago a sale took place here of a small quantity of Dutch Borneo tobacco. It was the past year's product, 1887, of a first attempt or experiment to cultivate tobacco in that part of Borneo. The result proved far from being satisfactory; the quality turned out to be rather poor, fetching only 65 cents. Dutch currency per half kilogram.

A gentleman here interested in the undertaking informs me that he is not in the least discouraged about attaining more or most favorable results from future trials soon to be made there on a larger scale. He also states to me that the product of the first planting was obtained under extremely unfavorable circumstances, so that the poor outcome does not disappoint him and those associated with him in the enterprise.

Statements showing the product of the statistics relating to the general commercial movements of the Netherlands in 1887, as compared with those of the four preceding years are as follows:

Year.	General imports.	Imports for consumption.	General exports.	Uitvoer nit het vrije verkeer.*	Goods in transit with transshipment.	Goods in transit without transshipment.
	<i>Kilograms.</i>	<i>Florins.</i>	<i>Kilograms.</i>	<i>Florins.</i>	<i>Kilograms.</i>	<i>Kilograms.</i>
1883.....	11,720,165,746	1,072,473,778	5,583,146,487	684,409,100	276,914,788	1,817,542,727
1884.....	11,925,794,447	1,128,471,467	6,009,079,145	841,231,746	275,441,258	1,891,705,692
1885.....	11,663,745,812	1,091,487,883	6,115,579,730	891,036,294	323,060,141	1,910,615,338
1886.....	11,579,166,228	1,102,693,328	6,046,068,794	949,245,799	376,636,918	1,793,406,179
1887.....	12,558,934,837	1,136,997,176	6,839,800,494	991,618,008	370,872,389	2,003,759,881

* By "Uitvoer nit het vrije verkeer" is meant: The exports of the "general exports" as consist of articles of domestic origin, and, if having been imported, of such articles as are not subjected to any customs control or fiscal formalities.

NOTE.—From the figures for 1887, compared with those for 1886, is shown that the general imports increased fully 8.46 per cent., the imports for consumption fully 3.11 per cent., the general exports fully 13.62 per cent., the "Uitvoer nit het vrije verkeer" nearly 4.46 per cent., the transit trade without transshipment nearly 11.73 per cent.; whereas the transit trade with transshipment decreased fully 1.58 per cent.

AMSTERDAM, *October 2, 1888.*

D. ECKSTEIN,
Consul.

THE LUMBER INDUSTRY OF THE OTTAWA VALLEY.

In previous annual reports the fact has been stated that the Ottawa district was a manufacturing and not an agricultural district. The exportations of agricultural products are merely nominal, deserving of little attention through their insignificance.

The all-absorbing industry is that of lumber, which is, as a specialty, not equaled in its extent and value at any other point in the Dominion. Such being the situation, my report will be confined mainly to facts and figures which are incident to the prosecution of the lumber business, not only of this district, but of the locality of country known as the Ottawa valley, through which, by means of the Ottawa River, this locality is drained of its forest products, and which river also furnishes the magnificent power to operate the saws which reduce the logs to shapely lumber.

has moved steadily onward. No difficulty

style, viz: Boards and plank, or English style, 3-inch "deal" were principally sold before any of the season's logs were sawed. In this connection I may add that probably 50 per cent. of all the stock which will be sawed at Ottawa and vicinity in the season of 1888 is already sold, even while the trees are yet standing in the forests. The yearly output of the Ottawa City Lumber Mills will approximate 350,000,000 feet. The product of mills tributary to Ottawa and its agency, Grenville, will aggregate 250,000,000 feet, making 600,000,000 feet for the Ottawa Valley district.

These aggregate figures to those unacquainted with lumber, or unaccustomed to lumber figures, will appear enormous; but when I say that these figures, multiplied by three, will not represent the full sum of the yearly requirements of the lumber trade of the city of Chicago alone, their insignificance will be apparent.

A false impression too generally prevails in regard to the importance and the influence on the American lumber markets of the pine lumber produced in Canada, as also the quantity of her available pine and the general quality thereof. In regard to the production of sawed pine lumber of a quality available for the United States market, and suitable for the demands of the English market, I firmly believe that the yearly aggregate will not exceed 1,000,000,000 feet. This quantity must be doubled to supply Chicago, and is but a fair supply for the little village of Tonawanda, N. Y., while the city of Buffalo would simply view this quantity with complacency as bidding fair for her one year's necessities.

This quantity, however, must be divided between the United States and England with other foreign markets, while Canada, for her own requirements, must, of necessity, reserve a portion. As it is with the United States alone I have to deal in this report, I have made great efforts to obtain reliable figures, both in feet and values, of the trade of this section with the United States for the calendar year 1887. I have carefully compiled from the 2,875 certificates which have passed through this office for the year a table of the quantity of sawed lumber with other forest products and the values thereof. Through the kindness and courtesy of the consuls at Prescott and Brockville, I am also enabled to give the amount in feet and value which has been declared through these consulates, which, combined with Ottawa, embrace the total exports of forest products of the Ottawa valley. In my judgment the quantity indicated by the figures is a reasonable approximate to one-half of the amount of sawed pine lumber which is exported from Canada to the United States.

The unprecedented drought of the past year, during the sawing season and till very late in the fall, undoubtedly curtailed the cutting capacities of the mills at Ottawa, specially and to a degree that of all the mills located on the Ottawa River, and which likewise extended to the log supply. The winter opened with a shortage of lumber on the docks for drying, estimated to be fully 50,000,000 feet. This shortage will be shown in the business of 1888, that of 1887 being merely nominal.

The important question now so widely agitating the American people, that of free lumber, and I may add free logs—for free lumber to the Canadian should mean free logs to the American—is one on which I may not be expected to venture a personal opinion, but I may be permitted, from the stand-point of a lumberman of over forty-five years' active experience in the lumber business in Canada and the United States, to review the situation as it appears to exist, and permit others to draw such conclusions therefrom as may enlighten them toward reaching a just termination of a complicated question.

I think I am warranted in presupposing that the desired object to be attained in the remission of the duty on lumber is an anticipated benefit to the American consumer at large, both by cheapening the market price now, as well as tending to prolong the existence of the American forests by the substitution of Canadian lumber and logs—the only other country which has white pine timber.

Will the remission of the \$2 duty have the desired effect? I think not, and will give my reasons for the conclusion that no appreciable benefit will transpire to the American consumer, and why and how the advantage will accrue to the Canadians. The control of the prices of lumber in the United States is certainly and absolutely in the hands of the timber owners and large mill men. The standing timber is held in large bodies by heavy capitalists, who, owning the mills, can govern the supply of manufactured lumber, and this element of first control is the chief factor in making yearly market values, it being influenced only by the probable demand, present or prospective.

I assert that in the making of prices the American lumbermen have never been controlled or scarcely influenced in any degree by the competition of Canadian pine lumber. I confine my remarks to pine lumber, and have nothing to offer in respect to the spruce and hemlock of the eastern portion of Canada, tributary to the Eastern States, or to the lumber of the northwest provinces, tributary to the United States' Territories and far Western States; but to the white pine sawed lumber, the produce of the middle part of the provinces of Quebec and Ontario, lying between Montreal on the east and Lake Superior on the west, within which bounds is produced the only quantities of white pine lumber worthy of any consideration, and which embraces the Ottawa valley, the chief outlet of this immense district or pine belt lying north of the Ottawa River.

The fact that pine trees are not reproduced enters largely into the question of possibility of control of the timber. The question how, as well as by whom, are the pine forests of the United States and Canada owned and controlled is a factor in determining the future of prices and of the possible legislation.

having thus obtained absolute control and ownership they can and do manage their own business affairs in connection therewith without let or hindrance from the Government as grantor, such lands, subsequent to purchase by individuals, being subject only to local and State taxation. The timber thereon is cut at will or left standing, as the necessities or inclinations of the owners may compel or induce.

Turning now to the Canadian timber we find a widely different practice. The forest possessions are not sold by the governments which are the owners. The lands in Quebec are controlled by the provincial government of Quebec, while those in Ontario are controlled by the provincial government of Ontario. The Dominion government owns and controls but a limited area in the northwest. The forest possessions are not sold in fee simple, but are leased for a term of one year under certain conditions and regulations, the *modus* of doing which is by public auction. Whenever the Government may deem it judicious or opportune to dispose of certain areas of timbered lands it gives public notice of the time and place, with a description of the lands to be disposed of, and the privilege of leasing is put up for the highest attainable sum, which sum is to be paid simply as a bonus for the privilege of being the lessee of the lands offered, under conditions of lease or license, which are statutory and, of course, well understood by the bidders. The chief conditions of the lease, termed a "timber license," are that the lessee shall (additional to the first "bonus" paid), on the 1st day of May, pay into the Crown land office a certain sum per square mile (640 acres), which sum was originally \$1; then it was advanced to \$2, and is now fixed at \$3. If any trees have been cut on lands covered by the license, such cutting shall be duly reported under oath, and Crown dues paid therefor according to the tariff schedule, as given below.

Tariff of timber dues.

	Quebec.	Ontario.
Oak and walnut, per cubic foot.....	\$0.04	\$0.03
Maple, elm, ash, and tamarac, per cubic foot.....		.02
Norway and white pine, birch, bass-wood, cedar, and other square timber, per cubic foot.....	.02	.02
Pine saw-logs, including culls, each.....	.22	(*)
Spruce saw-logs, 13½ feet long, each	.05½	.10
Hemlock saw-logs, 13½ feet long, each	.06	.10
Hard wood saw-logs and tamarac, round.....	.22	.25
Balsam saw-logs, 13½ feet long, each.....	.05	.10
Pipe staves, per 1,000.....	7.00	7.00
West India staves.....	2.25	2.25
Cord-wood, hard, per cord of 128 feet.....	.16	.20
Cord-wood, soft, per cord of 128 feet.....	.08	.12½
Cedar rails, 10 to 12 feet long, per 100	.25	.01
Cedar picket, per 100.....	.15	.01
Cedar or pine shingles, short, per 1,000.....	.08	.01
Cedar or pine shingles, long, per 1,000	.15	.01

LUMBER INDUSTRY OF THE OTTAWA VALLEY.

Tariff of timber dues—Continued.

	Quebec.	Ontario.
Cedar fence-posts, per foot in length	.00½	.01
Cedar hop-poles, per 100	.20	.01
Rails, other than cedar, per 100	.10	.01
Pickets, other than cedar, per 100	.05	.01
Railway ties, any timber, each	.02	(†)
Hemlock lath-wood, per cord	.15	.01
Hemlock bark, per cord	.32	.30
Birch sticks, 28 feet long, each	25 to 30c.	1c. per cu. ft.
Knees, according to size, each	5 to 25c.	(†)
Futtocks, according to size, each	10 to 35c.	10
Cedar for shingles, per cord	.16	.12½
Pine for shingles, per cord	.20	.12½
Boom timber, round, spruce, per lineal foot	.00½	.01¼ cub.
Boom timber, pine or tamarac, per lineal foot	.01	.01¼ cub.
Small round spruce spars, under 10 feet, per lineal foot	.00½	
Birch, per cord of 128 feet	.30	

(*) \$1 per 100 feet. (†) 15 per cent. ad valorem.

Additional export Dominion customs tariff.

Pine and Norway saw-logs, per 1,000 feet, board measure	\$2.00
Spruce and hemlock saw-logs, per 1,000 feet, board measure	1.00
Shingle-bolts, per cord of 128 feet	1.50

By the character and sum of the annual land dues (\$300) and the nature and amount to be paid as timber dues (per tariff), a full appreciation of the position of the lessee will be had, while the lessor, the Government, it will be also observed, continues its sole control over the timber. The only rights which the lessee possesses is to cut the timber on his licensed lands and annually pay the Government its demands, and when promptly paid the continued right to renew the license yearly.

It is likewise the right of the Government to change the terms and conditions at will, taking effect after the 1st of May of the following year. I will refer to the last order making such changes, by which it will be seen how absolute is the Government control and their disposition in the premises.

PUBLIC NOTICE.

DEPARTMENT OF CROWN LANDS,
TORONTO, April 29, 1887.

Public notice is hereby given that, by order in council of 27th instant, the rate of ground-rent on timber limits or berths is increased from \$2 to \$3 per square mile per annum; and the dues on square and waving pine timber are increased from 1¼ to 2 cents per cubic foot; and the dues on pine saw-logs are increased from 75 cents to \$1 per thousand feet, board measure.

The increased ground-rent to be payable on licenses to cut timber granted or renewed on and after the first day of May, 1887, and the increased dues on pine timber and pine saw-logs to be payable on such pine timber and saw-logs as may be cut after the date last above mentioned.

[Signed.]

F. B. PARDEE,
Commissioner.

according to their holdings, but in sums ranging approximately from \$1,000 to \$80,000 individually on the annual dues to be paid on the lands, in addition to which comes the further advance on the timber cut.

I have been thus explicit in describing the systems of the two countries, for to my mind they are the key by which the situation and effect may be safely prejudged in case free lumber becomes a reality.

There is no dispute that the American manufacturer controls the making of prices. In doing this he is not influenced by the Canadian supply in any degree. If the duty of \$2 is removed it will not affect the American price, because it has never been a factor and will still be unfelt. No lower price will prevail in the United States than heretofore, and no different net results will be experienced by the manufacturer.

The Canadian, on the contrary, will lay his lumber down in the American market at \$2 less per thousand, and will obtain for it the same as the American does, so that the net result to the Canadian manufacturer will be a clear gain of the \$2 which the American Government has remitted. This additional net result to the Canadian manufacturer will, however, be of very brief duration.

Having shown how the governments in Canada continue their control of the timber lands and their disposition to tax them to the utmost, I am confident that not a May pay-day will pass before a public notice will issue in effect that a further increase in annual and timber dues has been made an order in council, in sums sufficient to absorb the \$2 per thousand into the provincial treasuries.

Some may question the light treatment which I give the production of Canada lumber exported to the United States, but I believe the statement to be sound and reliable that the Canadian sawed pine lumber sent to the United States for consumption is not sufficient in volume to affect prices by being a factor in any degree.

The following table, showing in feet and value the declared exports of sawed lumber and value only of other forest products for the calendar year ending December 31, 1887, will be proof positive to experienced lumbermen of the soundness of my conclusions. This table embraces the declared exports of pine at the ports of Ottawa, Grenville, Brockville, and Prescott, and is a fully reliable statement of the exports to the United States of the Ottawa valley section.

Location.	For consumption.	Value.	In bond for export.	Value.	Value, all other wood products.
	<i>Feet.</i>		<i>Feet.</i>		
Ottawa	150,199,285	\$2,017,648.47	33,698,348	\$610,795.71	\$155,489.36
Grenville	30,695,339	263,393.21	.....	.....	30,465.84
Prescott.....	9,497,863	116,513.23	.....	.....	4,191.60
Brockville.....	36,747,472	429,679.64	.....	.....	33,151.94
Total.....	227,139,959	2,827,234.55	33,698,348	610,795.71	223,208.74

The following shows the exports from Canada (customs returns) of pine boards and plank from all of Canada to the United States for the fiscal year ending June 30:

	Feet.	Value.
1884.....	557,266,000	\$7,056,508
1885.....	562,542,000	6,956,248
1886.....	514,985,000	5,853,021
1887.....	508,304,000	6,209,023

The following shows the export of pine saw-logs to the United States in the following years:

	Feet.	Value.
1884.....	974,000	\$8,012
1885.....	380,000	2,300
1886.....	6,350,000	49,242
1887.....	2,869,000	24,452

By comparing the quantities shown in the first table (being the amount exported from the Ottawa valley with the amount shipped annually from all of Canada, it will be found that the first bears a percentage to the total exported in 1887 of 50 per cent., showing the important position which the Ottawa district holds in this industry.

The second table will show also the correctness of my statement that the volume of pine lumber exported to the United States from Canada is too insignificant to have any influence in the making of prices in the United States. The figures show that if all the lumber sent into the United States from Canada was placed in the Chicago market it would supply but one-quarter of the requirements of that market alone, and but one-half of the quantity handled in either Tonawanda or Buffalo.

Regarding the few logs shown to be exported to the United States, they are of no account whatever, nor do I believe that if "free lumber" were to prevail that any appreciable increase of log exports would be seen, for the logs would, to a large extent, be manufactured into lumber at the place of growth, or approximately so, as long as the lumber was admitted free. This course presents very many palpable advantages as against the expense of the transfer of the mill.

A few mill-owners on the shores or adjacent to the shores of Lake Huron and Lake Michigan, having exhausted their available timber, would make a few spasmodic attempts to import logs from Canada, but a very brief attempt to handle logs across the lakes would develop the superiority of the location nearer the timber. In addition to this, by operating their mills in Canada they would find the English markets open to them, for it is in Canada that the English buyer of pine lumber always has and undoubtedly will continue to find the manufacturer is one which will

The English demand also is gradually changing in the character of its requirements of "deals," sawed boards, and plank.

That the character and volume of the English trade demand for sawed pine lumber from Canada may be properly appreciated, and that its relative importance to the Canadian, as compared to his trade with the United States, I append a statement of the exports to Great Britain for the same years which I have heretofore given for that to the United States. This comparison shows that fully double the quantity is sent into the United States market in feet over that sent into the English market, but as that sawed for the English is 90 per cent. "deals," sawed 3 inches thick, and is now accepted down in quality to a grade made from quite "common stock," the greater advantage to the manufacturer lies in catering to the English requirements.

Pine boards, planks, and "deals" exported from Canada to Great Britain in the following years. (Canadian statistics.)

Description.	1884.		1885.	
	Quantities.	Value.	Quantities.	Value.
	<i>Feet.</i>		<i>Feet.</i>	
Plank and boards.....	24,484,000	\$297,786	19,156,000	\$251,070
Deals	700,766,000	7,610,813	198,393,250	2,679,270
Total.....	725,250,000	7,908,599	217,549,250	2,930,340

Description.	1886.		1887.	
	Quantities.	Value.	Quantities.	Value.
	<i>Feet.</i>		<i>Feet.</i>	
Plank and boards.....	12,673,000	\$155,221	17,016,000	\$241,360
Deals	205,326,000	2,944,230	207,861,500	3,148,161
Total.....	217,999,000	3,099,451	224,877,500	3,389,521

The abnormal exports of the year 1884 will be specially observed, but can not be explained.

This subject is a prolific one, and very many points of interest and of commercial value could be entered into in connection therewith, but to do this would occupy more space than is allotted to this character of consular reports. If, however, from the statements, conclusions, and statistics given I have in any degree assisted toward a clearer understanding of the free lumber problem, the purpose in view will have been attained.—OTTAWA.

THOS. H. HOTCHKISS,

Consul.

COMMERCE AND FISHERIES OF ST. PIERRE.

Miquelon Islands, three in number, are situated in the Atlantic Ocean, about 25 miles from the southern coast of Newfoundland. They are owned by France and are used by that country as a penal colony for soldiers convicted of minor offenses. The principal industry of the place is the fisheries, which are conducted very extensively. The islands are designated as Great Miquelon, Petite Miquelon, or Langlade, and St. Pierre. Great and Petite Miquelon are connected by a sand bar about 7 miles in length, very narrow in the center, and widening as it approaches the islands. St. Pierre is separated from the other islands by a strait about 2 miles wide very difficult to navigate on account of the strong tides. Great Miquelon has an area of about 26,000 acres of irregular rock surface, high and bold towards the sea, and almost destitute of soil or vegetation. Petite Miquelon has an area of about 20,000 acres, of the same characteristics as Great Miquelon; a small portion of it, however, is suitable, with great labor, for agriculture, which is carried on to a very limited extent. St. Pierre has an area of about 6,500 acres, only about 200 of which are suitable for town purposes. It has a good harbor where the town of St. Pierre is located. The island is wholly unproductive, except so far as the inhabitants have overcome nature by utilizing earth brought by ships as ballast as an artificial soil, enabling them to grow shrubbery and a few vegetables, and which softens the appearance of the town in contrast with its rugged and sterile surroundings.

POPULATION.

The population of Miquelon, according to the census of 1887, is as follows:

Great Miquelon	611
Petite Miquelon.....	574
St. Pierre.....	4,744
Total.....	5,929
Males.....	3,013
Females.....	2,916
Total.....	5,929

NATIONALITY.

Natives of Miquelon.....	3,779
Natives of France.....	1,373
Natives of French colonies.....	11
Natives of United States.....	19
	672
	73

COMMERCE.

The commerce of St. Pierre reached, in 1887, in round figures, the marvelous sum of 32,000,000 francs, the exports for that year being 18,230,270 francs, as shown below :

	Francs.
To France, merchandise, French origin.....	102,676
To France, merchandise, foreign origin.....	520,840
To France, product of Miquelon, dry fish.....	11,253,937
To Martinique, French colony, dry fish.....	341,728
To Guadeloupe, French colony, dry fish.....	1,493,500
To La Reunion, French colony, dry fish.....	271,749
To Algeria and Tunis, French colony, dry fish	45,820
To foreign countries, dry fish	890,504
To foreign countries, various products	3,255,733
Total.....	18,230,272

IMPORTS.

The imports of St. Pierre for the same year amounted to 13,746,587 francs, made up as follows :

	Francs.
From France, clothing and confections.....	890,504
From France, wool, cotton, and silk goods.....	591,246
From France, butter and lard	99,611
From France, wine, beer, and cider.....	504,652
From France, alcoholic liquors	399,920
From France, salt.....	696,655
From France, nets and fishing supplies.....	185,772
From foreign countries.....	10,378,227
Total.....	13,746,587

On account of its geographical position and its proximity to the southern coast of Newfoundland, St. Pierre is an important commercial center. The fishermen of the Newfoundland coast, up to the present year, brought bait to St. Pierre, where they exchanged it for provisions, dry goods, etc. This system of exchange caused great activity in trade, but the passage of the bait act by the Newfoundland legislature deprived its own people of this very profitable market for their bait, and injured themselves more than it did the French fishermen, against whom it was aimed. The commerce of St. Pierre is mostly in the hands of French citizens. Foreigners can not trade in fish unless through a French partner. Of the importations of St. Pierre, amounting to 13,746,587 francs in value, only about one-fourth comes from France. The other three-fourths come from foreign countries. Canada finds a market at this place for products valued at 887,950 francs. I was unable to procure the exact figures of the value of imports from the United States, but they are valued at nearly 1,000,000 francs. There is no reason, unless it be a want of regular steam transportation between United States ports and St. Pierre, why the United States can not have almost a monopoly of this trade. The merchants of St. Pierre prefer trading with

to them. If some enterprising ship owner would run fortnightly between Boston, St. Johns, Newfoundland, St. Pierre, Sydney, and Halifax a steamship of about 800 tons, with passenger accommodations, I feel assured that it would be a most profitable venture, and it would open up a large commercial field for our merchants. The duty on merchandize entered at St. Pierre being nominal would not affect the trade. During the year 1887 3,543 vessels entered at the custom-house at St. Pierre and 3,529 cleared, representing a total of 422,334 tons.

THE FISHERIES.

St. Pierre, on account of its contiguity to the fishing banks, and the bounties paid by the Government of France, has become one of the greatest fishing stations in the world. The local fishing fleet consists of 220 vessels of from 40 to 90 tons; the fleet from France, of 120 square-rigged vessels, from 100 to 300 tons. The former land and dry their fish at St. Pierre, the latter bring their fish undried to France. The fisheries of the island are confined to cod, which have been very successful this year, notwithstanding the temporary inconvenience experienced in early spring by the passage of the Newfoundland bait act. The French Government pays a per capita bounty of 50 francs, and 10 francs per quintal for fish dried and exported from the islands. The fishing season commences about the middle of April, and terminates about the middle of September. It is not considered profitable to fish after the last-named date on account of the storms. St. Pierre depended heretofore entirely on Newfoundland for its supply of bait. The difficulty in procuring the bait mentioned above was overcome by obtaining in some way frozen herring, but was found that the cod would not take it, and the vessels using it returned empty. Salt squid, of which they had an abundance, was substituted and found to be successful, and the catch was more than an average one. The French claim that the Newfoundland bait act forced them to resort to methods within their own control to secure bait, and that they are now independent of Newfoundland. They have on hand sufficient bait for next spring's operation, and the money heretofore paid Newfoundland fishermen for bait is retained by the French fishermen.

GOVERNMENT.

The government of the colony consists of a governor, a secretary of the interior, a chief justice, and a commissioner of marine, appointed by the French Government, and which constitute the privy council, a legislature elected by the people of the three islands, and a city council for St. Pierre, elected by its citizens. The buildings are frame, with an occasional one of cement or brick, quite small and quaint. The streets of St. Pierre are narrow and without sidewalks. There are no cattle, sheep, or hogs for carting purposes, and

TRADE OF CARTHAGENA.

The declared exports from this consular district to the United States have increased over 400 per cent. within the last ten years, while the total exports have increased (according to the best data I have been able to obtain) over 300 per cent. during the same time.

As showing that this increase is not due to the crude products of Colombian forests, I tabulated the declared values of the India rubber and of the totals exported to the United States during each quarter of the years 1867, 1877, and 1887.

Quarter ended —	Declared value.					
	1867.		1877.		1887.	
	Rubber.	Total value.	Rubber.	Total exports.	Rubber.	Total exports.
March 31,	\$16,503.30	\$21,906.47	\$47,053.48	\$72,102.01	\$38,384.67	\$209,720.61
June 30*.....	77,279.79	105,680.23	21,878.58	41,140.83	24,747.51	234,252.10
September 30.....	51,341.52	60,764.01	33,424.86	51,712.10	45,691.45	236,119.57
December 31.....	21,774.54	26,895.71	24,852.19	55,372.53	47,936.62	233,056.50
Total during year..	166,899.15	215,246.42	127,209.11	220,327.47	156,760.25	913,148.78

* Raw cotton to the declared value of \$21,108.59 was exported to the United States during this quarter.

Should peace continue and the public works, which have caused this gratifying increase, be completed—both of which may be looked for under the new constitution and the present government—the future increase will be even greater, and Carthagená again become the commercial emporium of the Spanish main.

Under the Spanish rule the whole commerce (both exports and imports) of all that immense extent of country tributary to the Magdalena River passed through the gates of Carthagená. A canal, called the “Dique,” connected the strongly fortified bay of Carthagená with the Magdalena River, and gave them command not only of the rich agricultural products of that great river and its branches, but also of those famed mines of gold, silver, and emeralds which made Spain the most powerful and richest nation of those times.

But when this canal was neglected, left to silt up, and its navigation thus obstructed, commerce sought new channels. Santa Martha and Barranquilla divided the former trade of Carthagená, and when a railroad was built connecting the latter place with the open roadstead of Savanilla, it almost monopolized the foreign trade of Colombia.

This roadstead is so exposed and ships are obliged to anchor such a distance from shore as often to make loading or unloading impossible for days. Ships are not infrequently blown ashore there.

The delays and expenses attendant on lighterage under such circumstances,

the river steamboats at Barranquilla, induced the Government to order the re-opening of the Dique. The work has been carried on slowly at intervals, until now the last published report gives twenty-four steamers per month as the number making regular trips between Carthagená and all points on the Magdalena River and its tributaries.

The general government now recognizes the importance of this most necessary artery of Colombian commerce; has declared it a national work, and appropriated \$100,000 to begin making it, not only navigable for the largest river steam-boats at all seasons of the year, but also a permanent channel, as Captain Eads did at the mouth of the Mississippi.

Foreign trade has more than trebled, not only in value, but also in number of ocean steam-ships touching here. Ten years since not over five or six steamers called per month, now nineteen ocean steam-ships call here on their regular trips every month besides extra steamers.

The Atlas Steam-ship Company send their steamers direct from New York in eight days, arriving here every alternate Friday. The Spanish line connects at Havana for New York. The West Indies and Liverpool line sends a steamer from here to New Orleans every week, combined with the Harrison line. The Royal Mail, the French, and the Hamburg lines afford connections with New York and New Orleans via Colon, and direct with Europe, England, and the ports of the West Indies. The only American line touching at this port is the New Orleans and Colombian Steam-ship Company, which has one steamer, the *Madrid*, now on this route, and promises to put on another and faster vessel.

The distance from the sea-board to all points reached via the Magdalena River and its tributaries is the same by the Savanilla and Barranquilla route as by the Dique (Carthagená) route. It is, therefore, evident that commerce will prefer the safe and commodious Bay of Carthagená, where the river steam-boats can lay alongside the ocean steam-ships at all times, with no transshipment between the head of navigation on those rivers and the sea-board, to the exposed roadstead of Savanilla, with its expensive lighterage and transshipments there and at Barranquilla, so long as the Dique is kept navigable. Moreover, all the foreign trade of the Sinú and Atrato Rivers is, from necessity, obliged to pass through Carthagená.

Immigration and capital will make their valleys the gardens of the world, while their mountains are so rich in minerals that old residents state the Spanish conquerors would allow no prospecting parties in those regions, giving as their reason, "If we open the Sinú we shall ruin Peru."

A good macadamized road has been built from the "savannas" to Tolu, and a company formed to run steam-boats between Carthagená, Tolu, and the Sinú and Atrato Rivers.

been granted, and the present

AMERICAN MANUFACTURES.

Judging from the statistics accessible, about 24 per cent. in value and 43 per cent. in weight of imports, about 28 per cent. in value and 26 per cent. in weight of exportations, are from and to the United States.

It is within the personal knowledge of the writer that American manufacturers could easily sell very much greater quantities of their goods to Colombia. Take, for example, cotton goods. During a residence of over twenty years in this country I have made several attempts to introduce American bleached and unbleached cottons, calicoes, prints, etc. Several invoices of considerable value were brought, and both the quality and price proved satisfactory, but as the manufacturers refused to cut their pieces to the fixed lengths customary in South America, where all dealers buy by the "piece" instead of by the yard, importations stopped. A "piece" of calico contains 30 yards; a "bale," 50 "pieces."

When it is remembered that throughout the tropics cotton is universally worn, and that as universally a "piece" contains just so many yards, it seems strange that American manufacturers refuse so simple a means to secure a valuable trade.

England furnishes most of the cotton goods; her share of our total imports is about 45 per cent. in value and about 28 per cent. in weight.

A LOST TRADE.

Formerly the steam-boats navigating Colombian rivers were bought in the United States, now they are bought in England. One of the Carthagena companies has lately bought three first-class iron steam-boats in England, and they are now running regularly from Carthagena to the head of navigation on the Magdalena River via the Dique.

The latest one launched (the *Pedro Velez*) has horizontal compound surface-condensing engines, with two return tubular boilers; steam capstan; iron hull, divided into 18 water-tight compartments; length over all, 139 feet 6 inches; beam moulded, 24 feet 6 inches; depth moulded, 4 feet; main saloon, 50 feet; passenger state-rooms, 14; officers' rooms on hurricane deck; electric bells, and all modern improvements. Cost in England, over £11,000; and about £2,000 more for freight, skilled labor, putting her together here, etc.; total cost, when finished here, £14,000.

Considering how much nearer the United States are to Colombia, and the greater experience American builders have had in constructing steam-boats for shallow rivers, this sudden transfer of so important an industry from American manufactories to British workshops deserves careful attention and study.

DUTIES.

These are so highly protective as to have defeated their object. All attempts to establish manufactures here have failed, except those favored by special laws exempting from the ordinary duties the raw materials used therein.

those who first establish manufactories here to (under certain restrictions) introduce not only the "plant," but also the raw materials used, free of duties for a certain number of years.

To show the amount of protection thus afforded, I state the duties now levied on a few articles of daily use. All duties are levied on the gross weight of the package :

To protect the Government monopoly, the duty on salt, per kilogram, is.....	\$0.12
The duty on wire, steel bars, crockery, hides, soap, hams, etc., per kilogram.....	.25
The duty on boots, shoes (of rubber), handkerchiefs, etc., per kilogram.....	1.00
The duty on boots, shoes (of leather), linen handkerchiefs, etc., per kilogram.....	1.25
The duty on manufactured tobacco, woolen clothing, etc., per kilogram.....	1.50
The duty on a barrel of flour amounts to.....	6.25
The duty on a barrel of tar amounts to.....	12.50
The duty on a 10-gallon case of kerosene.....	4.37

"Concessions," giving exclusive privileges for a term of years, exemption of plant, materials, etc., from duties, have already been granted to contractors, viz: new wharves, with tram-way to custom-house, marine railway, foundry, and machine-shop, railroad to Arjona, electric lights, etc. Concessions for water-works, new market, petroleum refinery, furniture factory, and many others, are waiting responsible proposals. Petroleum oozes from the ground in several places in this consular district, and the forests are full of the finest cabinet woods, but we have neither refineries nor furniture manufactories. Duty on furniture is $6\frac{1}{4}$ to $37\frac{1}{2}$ cents per kilogram.

IMMIGRATION.

Much interest begins to be manifested in the best means of attracting immigration. The President treated the subject at length in his late message. The legislature of this department appointed a special "immigration commission," and appropriated \$30,000 to carry out its objects at the last session. The President favors immigrants of the Spanish race.

Although the soil and climate are such that all tropical crops flourish luxuriantly—rice grows on the hillsides, sugar-cane is better after twenty years than when first planted, two crops of corn per year, and grass grows all the year round—still this country is not the place for American agriculturists at present.

Theoretically, Colombia gives a homestead to settlers, but not one acre of land has as yet been surveyed or set apart for this purpose; and the exorbitant duties on what Americans consider the necessities of life makes living very expensive. It is a good country for the manufacturer with a "concession;" a bad country for laborers. On the Sinú and lower coast laborers receive from 20 to 50 cents paper (equal 10 to 25 cents in gold) per day and board, which never includes bread.

to be established here, and \$100,000 has been set apart for each of these. American machinery is preferred at equal prices. More steam-boats are wanted for the Dique. The contracts for the new wharves and tram-way are open to American competition also.

An American, Mr. C. S. Brown, has the contract to finish the Antioquia Railroad, and is now in the United States arranging for the necessary plant, steel rails, etc.

As New York is now only eight days from Carthagena, while England and Europe are three times as distant (by steamer), the advantages of the nearer market, in case of the breaking of any heavy piece of machinery, are evident. While in a country so infested with the white ant and the marine borer (*teredo*), creosoted timber and piles have only to be introduced to be in demand.

It is to be hoped American manufacturers will compete for these contracts, and by showing the superiority of American machinery, soon control this branch of Colombian imports. The skilled artisans, who would necessarily be sent out to construct and oversee these works, will naturally use and recommend the other manufactures of their own country.

As one means of showing the influence of the re-opening of the Dique on commerce, I inclose a table of the exports from Carthagena during 1881, 1886, and 1887, and of produce from Barranquilla during same years:

Years.	Carthagena.		Barranquilla.	
	Kilograms.	Value.	Kilograms.	Value.
1881.....	10,437,009	\$1,326,209	15,862,550	\$9,055,669
1886.....	15,396,295	2,156,631	13,438,460	4,526,354
1887.....	17,924,147	2,882,578	14,985,240	4,137,711

It is evident that when these public works shall have been finished, Carthagena will have regained her ancient prestige, and that now is the time for American enterprise to make itself felt.—CARTHAGENA, *September 5, 1888.*

W. B. MACMASTER,

Consul.

COPPER MINES IN MEXICO.

[Transmitted by Consul-General Sutton.]

A quiet movement now going on here, having for its end the securing of the best and most accessible copper districts, is likely soon to attract public attention. Mexican and foreign miners operating here have been so intent on prospecting for silver, in buying up existing mines and acquiring new ones, that they have quite overlooked the fact that a good copper mine is about the best property which can be held in these days of fluctuating values. The important announcement that the great French syndicate, the Société des Métaux, is to be extended for ten years more, and that it is stronger financially than ever, will not be passed unheeded by sagacious business men. This announcement means that the copper syndicate

world, and every month we read of new acquisitions by the syndicate, ranging from Spain to Chili. We notice that the Boston Montana mine (United States) has just sold 45,000 tons for delivery over three years at 12 cents (gold) per pound. The world's stock of old copper metal (undoubtedly very large but still not inexhaustible) is a great factor in the problem of the future price of copper. But the soundest authorities agree that this factor is being slowly but surely eliminated from the problem. The present high price has brought out from its hiding places a very large quantity of old copper, and there are good observers of the metal market who predict that this source of supply can not long continue to yield much. Copper is being used more and more every year, especially in the modern applications of electricity. The newly-invented systems of transmitting power by electricity will create a demand for copper-wire twentyfold greater than the supply required for electric lighting and telegraphy. The best authorities the world over predict a vastly increased use of copper. In the United States copper is not being carried in stock to the extent that it was in former times, and for the simple reason that the great copper firms and companies can not secure it in sufficient quantities. Gradually the great French copper syndicate is gaining control of the world's market, and there seems good reason to believe that it will finally achieve its end, that of controlling the copper product of the world and thus regulating its price. All over the world holders of stock in copper mines find their property growing more and more valuable. These facts will explain the movement for the acquisition of copper mines now going on in this country, and may explain (certainly they are sufficient to do so) the negotiations now going on by a great London banking-house for the acquirement of a recently granted concession for a railway which will traverse a rich copper district here. While silver is greatly depreciated, and no one has confidence in its future, copper shows signs of steady advancement, and will be, for several years to come, a favorite field for speculation. We look for substantial results to the country from this advance in copper through the stimulation given to the development of a neglected source of wealth.

In our financial section this week we call attention to the strong movement in copper, and to negotiations going on here looking to the control of the copper product of this country. The Mexican copper importation into France for the first eight months of this year was 1,200 tons and into England 60 tons. Every one conversant with mining in this country knows that although this may not be a country especially rich in copper, yet its production will be largely increased, if the price of the metal continues to range high, as is very probable. The French copper syndicate has finally succeeded in controlling the output of the greatest copper mine in the United States, the Calumet and Hecla. In connection with this interesting subject we give a few paragraphs from our exchanges. The Engineering and Mining Journal says:

"Were it not that copper is so indestructible the world's present supply would certainly not meet the world's present demand. While, therefore, it is very likely that the high price has brought from its hiding place certain stocks of old metal, which have temporarily replaced new copper, there is no good reason to suppose that this supply is perennial. It is not the first time in the history of the copper trade that prices have been seriously affected by a sudden influx of old copper. After the great Napoleonic wars the dismantling of the British fleet threw on the market such large quantities of sheathing as to produce a deluge of copper and a terrible shrinkage in value. The price fell at the close of the war over 20 per cent. A similar sudden accession to stocks, followed by a decline in price, succeeded the Indian mutiny, because of the large treasures of copper held by the natives of Hindoostan which found their way into general circulation. Copper which stood at £124 in 1857 fell to £108 in 1858. But this surfeit of old copper was in time digested by the market, which has always absorbed, year by year, a certain normal proportion of old metal. What that factor is, is very large. There is, however, of necessity, into it by

The Boston Advertiser, discussing the copper monopoly, remarks:

"The product of all the copper mines in the world has been purchased by this great syndicate at a higher price than could ever be obtained under a healthy competition, and the market thus being cornered, the rate is marked up and both the producer and the syndicate are benefited, their entire profit coming, of course, out of the pockets of the users of copper, the effect being felt at once, as in type metal, the price of which has been arbitrarily advanced. Hardly another city in the world profits more largely in one respect than Boston, where the richest copper mines on this continent are owned. Those of our citizens who were fortunate enough to own the stocks of almost any copper mines have seen their wealth increase and their dividends expand. The speculation in copper stocks has been remarkable, and while the price has been advanced for copper only one-third, there is no reason why it may not be increased at almost any rate the syndicate may decide. It controls the supply the world over, and may do as it will." — *Mexican Financier*, September 29, 1888.

FOREIGN COMMERCE OF ITALY IN CEREALS AND BREADSTUFFS.

STATEMENT No. 1. — *Details of the foreign commerce of Italy in cereals and breadstuffs for the year ending December 31, 1887.*

Countries.	Wheat.		Indian corn.		Barley.		Oats.		Other grain.	
	Imports.	Exports.	Imports.	Exports.	Imports.	Exports.	Imports.	Exports.	Imports.	Exports.
	<i>Tons.*</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>
Austria.....	16,488	2,252	86	9,854	3,110	109	2,705	89	1,956	2,170
Belgium.....							529			31
France.....	7,719	243	307	2,633	120	101	221		573	4,090
Germany.....		534	60		283				18	90
Great Britain.....	5,597					755	307		986	408
Switzerland.....		1,682		4,123	187	39	14	314	134	1,170
Greece and Malta..	4,405				153	191	525		49	154
Portugal.....						350				131
Holland.....	515									24
Spain and Gibraltar										1,829
Roumania.....	20,136		758				680			
Russia.....	523,223		10,341		4,531		29,730		3,147	
Turkey in Europe..	148,939		2,631		2,707		11,374		9,582	22
Turkey in Asia....	25,101				121		25		127	53
British East India.	184,681		422				66		1,070	
China.....	674									
Egypt.....	566								37	46
Tunis and Tripoli..	19,850				2,422					71
Algiers.....	2,190				2,337		704			435
Other African countries.....	886				331	26				47
United States and Canada.....	21,914	11	4,634						473	281
Argentine Republic	8,399	23	1,889						483	46
Uruguay.....	1,235						207			
Peru.....	321									10
Other American countries.....	13,021	10	5,523						635	657

FOREIGN COMMERCE OF ITALY.

STATEMENT NO 1.— *Details of the foreign commerce of Italy*—Continued.

Countries.	Rice, not shelled.		Rice, shelled.		Flour.		Bran.	
	Imports.	Exports.	Imports.	Exports.	Imports.	Exports.	Imports.	Exports.
	Tons.*	Tons.	Tons.	Tons.	Quintals†	Quintals.	Quintals.	Quintals.
Austria.....	44	524	2,082	10,909	22,236	2,163	68,534	2,099
Belgium.....			86	24	149			
France.....	14		154	18,978	22,526	9,452	10,654	7,229
Germany.....	80	416	5,402	1,820	167	6,048	771	535
Great Britain.....	14		3,071	266	1,224	5,699	1,293	1,323
Switzerland.....		5		1,912	26	9,627	13,552	
Greece and Malta.....			286	921	236	205		
Portugal.....				40				
Holland.....			5,399	14		11,739		346
Spain and Gibraltar.....				143		233		
Roumania.....					70			
Russia.....			42	1,768	40,084		16,568	
Turkey in Europe.....			200	4,115	7,411	34	10,893	
Turkey in Asia.....				1,928	3,533			
British East India.....	20,480		220		42	43		
Japan.....	275						51	553
Other Asiatic countries.....	3,260				150		763	580
Egypt.....					490	325		117
Tunis and Tripoli.....					102	1,008		
Algiers.....					69		166	214
Other African countries.....			13	1,100				
United States and Canada.....				6,178	1,184	1,446		
Argentine Republic.....				1,441				
Uruguay.....				301				
Peru.....				517	382	45		
Other American countries.....								

* Ton = 2,000 pounds.

† Quintal = 220.464 pounds.

STATEMENT NO. 2.— *Totals of the foreign commerce of Italy in cereals and breadstuffs for the six months ending June 30, 1888, compared with same period in 1887.*

Cereals.	Imports.			Exports.		
	Six months ending June 30, 1888.	Six months ending June 30, 1887.	Difference for first six months of 1888.	Six months ending June 30, 1888.	Six months ending June 30, 1887.	Difference for first six months of 1888.
Wheat.....tons*...	411,680	474,557	— 62,877	1,886	2,915	— 1,029
Indian corn.....do.....	423	15,424	— 15,001	11,554	6,085	+ 5,469
Barley.....do.....	5,526	7,289	— 1,763	386	1,279	— 893
Oats.....do.....	13,078	33,618	— 20,538	346	144	+ 202
Other grain.....do.....	9,769	8,960	+ 809	14,127	3,423	+ 10,704
Rice, not shelled.....do.....	6,245	17,800	— 11,555	660	386	+ 274
Rice, shelled.....do.....	1,003	15,284	— 14,281	7,305	35,351	— 28,046
Flour.....quintals†...	21,851	58,748	— 36,897	17,848	17,988	— 140
do.....	26,127	84,799	— 58,672	16,612	6,201	+ 10,411

TRADE OF FRANCE WITH THE UNITED STATES.

The following statement shows the declared exports between the consular district of Cognac, France, and the United States for the year ending June 30, 1888:

Articles.	Quarter ending —				Total for the year.
	September 30, 1887.	December 31, 1887.	March 31, 1888.	June 30, 1888.	
Brandy	\$98,662.71	\$295,971.85	\$170,073.39	\$254,728.33	\$819,436.28
Coloring matter.....				51.72	51.72
Corks.....		5.42			5.42
Decanters and vials.....		3.47		2.90	6.37
Fruit preserves		178.64			178.64
Meat pies		78.14			78.14
Olive-oil.....	191.38	324.65		58.96	574.99
Paper.....	5,963.87	3,592.21	908.16	730.85	11,195.09
Rum.....		139.79			139.79
Show cards.....		48.35		57.90	106.25
Wine.....	27.22	336.64	476.32	497.94	1,338.12
Total (in U. S. gold).....	104,845.18	300,679.16	171,457.87	256,128.60	833,110.81
Total preceding year.....	227,981.07	321,841.82	210,347.14	171,439.06	931,609.09
Decrease during year 1887-'88...					98,498.28

OSCAR MALMROS,
Consul.

EXPORTS FROM BARMEN TO THE UNITED STATES.

The following statement shows the value of declared exports from the consular district of Barmen to the United States during the four quarters of the year ending September 30, 1888:

Articles.	Quarter ending —				Total for the year.
	December 31, 1887.	March 31, 1888.	June 30, 1888.	September 30, 1888.	
Yarn.....	\$29,633.23	\$70,697.74	\$14,466.50	\$16,501.31	\$131,298.78
Braids, bindings, and trimmings..	349,311.91	343,522.70	188,393.25	154,360.82	1,035,588.68
Buttons and button stuffs.....	129,422.64	59,747.04	86,668.41	37,821.46	313,659.55
Dress and piece goods :					
Silk and silk-mixed	23,526.74	33,422.78	37,189.79	52,338.44	146,477.75
Woolen and woolen-mixed...	183,987.47	92,749.52	142,611.05	121,646.55	540,894.59
Dyes and chemicals :					
Aniline, alizarine, etc	33,437.60	52,339.03	24,139.21	17,552.65	127,468.49
Hat-bands and ribbons.....	187,969.42	138,744.45	218,924.98	312,112.04	857,750.89
Plushes	18,995.16	22,108.83	12,901.77	9,954.84	63,960.60
Metal goods :					
Brass, bronze, and fancy.....	24,015.65	34,379.59	79,808.22	55,090.48	193,293.94
Hardware and cutlery.....	128,451.33	98,190.33	98,850.29	127,201.86	452,693.81
Iron and steel.....	119,243.30	129,023.62	125,884.77	155,486.84	529,638.53
Machines.....	10,875.33	4,813.02	584.71	2,512.23	18,785.29
Hams, sausages, etc	8,828.62	7,465.21	9,778.00	1,124.04	27,195.87
Various	20,900.04	45,641.95	5,508.11	35,930.26	107,980.36
Total	1,268,598.44	1,132,845.81	1,045,709.06	1,099,633.82	4,546,687.13
Total preceding year.....	1,079,682.23	1,181,405.78	1,564,569.45	1,758,050.04	5,583,707.50
Increase.....	188,916.21				
Decrease.....		48,559.97	518,860.39	658,416.22	1,027,020.27

AUSTRALIAN HORSES.

The success attending the recent exportation of horses from Sydney to California, China, and India has directed my attention to the condition of horses in Australia. The horse appears to do well in any part of the great island continent, and especially in New South Wales, where the climate and other conditions of the country are peculiarly adapted to stock-breeding of all kinds. So much, however, is said about Victorian wool and Victorian horses that one would suppose Victoria had all the sheep and horses and New South Wales none, whereas the latter colony has not only four times as many sheep as Victoria, but also exceeds her in the number of her horses, whilst the breed and conditions of both animals in New South Wales are quite equal if not superior to those of Victoria. It will, perhaps, be a matter of still greater surprise to those not conversant with the condition of live stock in Australia to learn that, notwithstanding the prominence given to horse-racing in Victoria through the unparalleled success of the Melbourne Cup, that the colony providing the sport has for many years failed to carry off the prize, and that at the last annual meeting she did not bring to the contest a single locally-bred horse. The only explanation offered for the failure, as far as I am aware of, is that Victorian stock farmers are more cautious than formerly about risking their money on the chances of racing. It can not be said, however, that the public are in any way growing weary of the sport, for race-courses are multiplying rapidly throughout the colony. If further evidence is wanted of the truth of the above it can be found in the increased enthusiasm displayed by the people upon every recurrence of their great annual festival, viz, the Melbourne Cup. This great carnival seems to absorb the attention of the people to the exclusion of everything else. It is usually held on the 1st of November in each year. The day is proclaimed a public holiday. At the last Melbourne Cup more than 100,000 people were present, and it was noticed that the excitement over the contest, especially amongst the fair sex, was even greater than on any previous occasion. Some of the ablest authors in Europe and America are employed to chronicle the event, and from six to seven columns of printed matter describing the proceedings are cabled to the Associated Press. The toilets of the ladies at this great festival are said to be more beautiful and brilliant than anything of the kind seen at Paris during the Second Empire. Vice-royalty is invariably present and the governor of the colony makes it a state affair by pinning the blue ribbon on the winning horse.

The introduction of horses into Australia appears to have begun with the
Great care was taken to select only the best and
settlers of the frequent

through careless breeding or other causes, the horse in Australia was allowed to deteriorate, and it is said that his condition was made still worse by the introduction of vicious blood from Spain, but I can find no record of Spanish horses ever having been introduced into Australia, and it is probable that the statement originated from the fact that many of the animals were allowed to run wild and when caught displayed the vicious habits said to be common to those of Spanish origin.

About the time of the discovery of gold (in 1850), horses were sold in Australia at a mere nominal sum, but they were generally of very light condition and in most cases were caught wild. The estimated number of wild horses at the present time in New South Wales is about 10,000, most of which are in the New England district. The riata or lasso appears never to have been used for catching wild horses. The early settlers being Britons were probably ignorant of its existence. The Australian stockman seems always to have relied upon his heavy long-tongued stock whip. This whip is made out of rawhide and is about 15 feet in length, having not unfrequently as many as twenty strands with a heavy filling of hide plaited in the end near the handle which is of wood, and about 10 inches long. The lash tapers neatly to a point and is sometimes tipped with silk but in most cases is composed of green hide. This whip in the hands of the average stockman is a powerful instrument of punishment. It will cut deep into the flesh and draw blood at every stroke. The stockman is usually so much of an expert that he has little difficulty in driving and yarding large herds of the wildest horses, indeed three or four average stockmen in Australia do more and better work in the way of mustering and driving stock than double the number of Mexicans could do armed with the lasso, and with far less cruelty to the animals.

NUMBER OF HORSES.

At the close of 1886 the number of horses in Australia was 1,372,756. At that time New South Wales had 361,363, but the number since then has increased to 389,146. The subjoined table shows the number of horses in each of the colonies of Australasia for the year ended December 31, 1886, being the latest statistics available for the whole of the group:

New South Wales.....	361,363
Victoria.....	308,553
Queensland	278,694
South Australia.....	168,420
Western Australia.....	38,360
Tasmania.....	29,684
New Zealand.....	187,382
Total.....	1,372,456

The number of horses is not so large in New South Wales as it was in 1881, when it reached 398,577, the highest figures known in the history of the

number has been increasing ever since. The subjoined table shows the number of horses in New South Wales for each year from 1877 to 1887, inclusive:

Year.	Number.
1877.....	328,150
1878.....	336,468
1879.....	360,038
1880.....	395,584
1881.....	398,577
1882.....	328,026
1883.....	326,924
1884.....	337,172
1885.....	344,697
1886.....	361,663
1887.....	389,149
Total.....	3,906,448

CLASSIFICATION.

All the colonies are well supplied with draft horses such as Clydesdales, Clevelands, etc. Victoria and New South Wales have the largest number of thoroughbreds, but South Australia and New Zealand are also well represented in this class of horses, indeed the number of thoroughbreds in proportion to population is unusually large in every one of the colonies. I am indebted to Mr. Alexander Bruce, chief inspector of stock, for the following table showing the classification of horses in New South Wales for the year 1886:

Class.	Thoroughbreds.	Ordinary.	Total.
Draft	15,473	90,509	105,982
Light-harness.....	12,294	87,820	100,114
Saddle	20,028	135,409	155,437
Total	47,795	313,738	361,533

The number annually fit for market is as follows:

Draft.....	17,000
Saddle	28,000
Light-harness.....	17,000
Total.....	62,000

The quarantine laws against the importation of horses have recently been repealed, and they are now allowed to land upon inspection. Unlike sheep, United States instead of by way of

Year.	Number.	Value.	
1877.....	1,563	£28,951	\$130,890.04
1878.....	792	29,922	145,615.41
1879.....	1,522	28,362	138,023.67
1880.....	1,034	26,862	130,723.92
1881.....	1,885	40,071	195,005.52
1882.....	2,023	63,099	307,071.28
1883.....	3,067	84,589	411,652.36
1884.....	4,453	114,260	556,046.29
1885.....	6,708	168,495	819,980.91
1886.....	3,310	105,190	511,907.13
1887.....	5,793	163,791	797,088.90

It will be seen from the preceding table that the largest number of horses admitted during any one year was in 1885, when it reached 6,708. The sub-joined table shows the number and value of horses imported into New South Wales during 1886 and 1887, with the names of the countries whence imported :

Horses imported in 1886.

Country.	Number.	Value.	
Great Britain	14	£2,710	\$13,188.21
Victoria	1,828	62,391	303,625.80
South Australia.....	38	1,000	4,866.50
Queensland.....	181	2,718	13,227.14
Tasmania	2	70	340.65
New Zealand	1,236	35,661	173,544.25
United States.....	11	640	3,114.56
Total	3,310	105,190	511,807.11

Horses imported in 1887.

Country.	Number.	Value.	
Great Britain	7	£2,520	\$12,263.58
Victoria	3,743	128,282	624,284.35
Queensland.....	1,523	16,242	79,041.69
South Australia.....	89	1,283	6,243.71
New Zealand	406	13,627	66,315.79
Tasmania	19	1,370	6,667.10
United States.....	4	360	1,751.94
Fiji.....	2	107	520.71
Total	5,793	163,791	797,088.87

EXPORT OF HORSES.

The following is a table showing the number and value of horses, the produce of the country, exported from New South Wales for each year from 1877

Year.	Number.	Value.	
1877.....	5,147	£84,339	\$410,435.74
1878.....	3,679	66,441	323,335.12
1879.....	2,076	33,449	152,779.55
1880.....	3,952	61,619	309,868.86
1881.....	3,498	56,868	276,748.12
1882.....	2,919	65,018	316,410.09
1883.....	2,757	61,773	300,618.30
1884.....	4,972	128,998	627,768.76
1885.....	4,709	142,421	692,091.79
1886.....	4,916	126,121	613,767.84
1887.....	3,669	135,777	660,758.77

The heaviest export occurred during 1877, when the number was 5,147, and the smallest was in 1879, when it was 2,076.

The following is a table showing the number and value of horses, the produce of the colony, exported during the years 1886 and 1887, with the names of the country to which exported :

Horses exported in 1886.

Country.	Number.	Value.	
Victoria	3,088	£91,929	\$447,372.47
South Australia.....	66	1,028	5,002.76
New Zealand	10	600	2,919.90
Queensland.....	520	10,728	52,207.81
New Caledonia	7	260	1,265.29
Fiji	34	870	4,233.85
United States.....	2	80	389.32
India.....	349	4,788	23,300.80
Honolulu	1	280	1,362.62
Singapore	33	1,220	5,937.13
Java	1	30	145.99
Western Australia.....	805	13,661	66,481.25
Total	4,916	125,474	610,615.19

Horses exported in 1887.

Country.	Number.	Value.	
Great Britain	6	£250	\$1,216.62
Victoria	2,757	115,509	562,124.54
South Australia	82	1,225	5,961.46
New Zealand	3	55	267.65
Queensland.....	493	11,001	53,536.36
New Caledonia	23	750	3,649.87
Fiji.....	1	25	121.66
.....	8	1,070	5,107.15
.....	1	55	267.65
.....			91,080.47

Mr. Alexander Bruce, the chief inspector of stock in New South Wales, in his last annual report deplores the deterioration of saddle and light-harness horses. He states that:

Twenty-five or thirty years ago the saddle-horses of the colony, which were acknowledged by competent judges to be the finest in the world, are now seldom met with in any part of the colony. This opinion was strongly expressed by British officers from India, who came here for the purpose of purchasing horses for the Soudan cavalry. Even fairly useful saddle-horses for ordinary work are not readily procurable in any considerable number, while horses suitable for the cavalry or police service are scarce and a purchaser looking for a stout upstanding, well-bred, town-hack, or hunter is often months before he can meet with one. These remarks, as far as style, breeding, and scarcity are concerned, apply in a considerable degree also to light-harness and carriage horses; and so much is this the case that horses of both these stamps, as well as heavy draught, are being sent over to this colony from New Zealand in considerable numbers. I mention these facts with a view to give weight to the suggestion I again make, viz: That some of our breeders possessing the means and ability should give their attention to founding a confirmed breed of true Australian saddle-horses with size, shape, style and fire, which a good hack or cavalry horse ought to possess, and that others again might establish a confirmed breed of stylish, powerful light-harness and carriage-horses. To suit the different kinds of country and different climates, as well as for other purposes, we have the various breeds of short-horn, Hereford, Devon, Black-polled, Ayreshire, and Alderney cattle, all distinct and pure of their kinds, and for like reasons we ought to have distinct pure-bred saddle and distinct pure-bred light-harness horses of confirmed breeds.

Mr. Bruce finds fault with the almost universal practice in New South Wales of putting the race-horse to half or three-quarter breeds, as such a system tends to deterioration and disappointment, for it is breeding in direct opposition to the rules and principles of breeding. He says "if the Short-horn, Devon, and Hereford cattle were bred in the same way the result would be ruin to the farmers." By putting the race-horse to cross-bred mares we get, if the mare is light and small, comparatively useless weeds, and if the mare is large with most likely a good dash of cart-horse blood, the progeny may be of fair size, but most probably plain and coarse with an ill-fitted combination of the shapes and parts of sire and dam. Mr. Bruce shows, I think, conclusively in his report that the progeny of the race-horse and mongrel mare can not possibly have the qualities attributed to the Australian horse thirty years ago. "The horse of that period," Mr. Bruce says, "was the beau ideal of a saddle-horse with beauty, strength, size, and style, and, moreover, was capable of carrying a full-grown man 100 miles or more inside of twelve hours, a performance which is seldom recorded now." Even the Australian race-horse, he says, is in most cases a light, weedy animal of little use to any one but the gambler.

He concludes his report with the following:

There are, of course, a few powerful thoroughbreds, but their value for racing purposes puts them altogether beyond the reach of those who breed hacks. Until, therefore, some of our breeders take up the business in a systematic and practical manner by purchasing a thoroughbred sire, whose stock runs large and stout, with plenty of bone below the knee, selecting mares of the right stamp, carefully mating the progeny, exchanging all the mares whose stock

do not turn out sound, strong, shapely, and stylish, for others; and when stock of the right stamp are bred, continuing to breed strictly within his own lines, even though comparatively close at first, until the breed is thoroughly established and confirmed, and jealously preserving it when once it is so. That horses of such a stamp as here contemplated will eventually pay, even better than thoroughbreds, large though the prices obtained for them sometimes are, there is no doubt; for not only is the demand for our own ordinary use — to say nothing for cavalry and police — large, and good prices are now paid for horses of the right stamp, but India and China will always be buyers for far more horses of this description than we or the other colonies can breed, and there is no part of the world better adapted for breeding horses of this stamp than Australia, and no part of Australia better than New South Wales.

THOROUGHBREDS.

The race-horses of Australia have for many years been justly celebrated for their speed, and there is perhaps no other country in the world where so much capital is invested in racing in proportion to population as in Australia. The fastest time ever made in the colonies was at the last Melbourne Cup, the 2d of November, 1887 (on the twenty-seventh anniversary of that great racing carnival), when Dunlop made the 2 miles in three minutes and twenty-eight and one-half seconds. Dunlop was bred at the stud farm of Sir Thomas Elder, in South Australia. The sire of Dunlop was the celebrated Neckersgat from Eta (imported) by Parmeanean from Queen Lily.

Eighteen horses were entered for the Melbourne Cup, the smallest number since 1874, but what was lacking in numbers was more than offset by the superior quality of the animals. Silvermine and the Australian Peer were the favorites. The former won the Melbourne stakes, and the latter the Derby on the day previous. Very few thought that Dunlop would win and the betting was twenty to one against him, in fact, he was the dark horse in the race. After the start he soon showed the mettle that was in him. He was however, hard pressed by the Australian Peer and Silvermine. Just before the close it looked as if they would distance him far in the contest, but Dunlop was reserving his strength and with a wonderful flight of speed passed the others winning the cup easily by a length and three-quarters. The Australian Peer beat Silvermine by a short length for second place while Niagara was fourth with his head on Silvermine's quarter; then came at intervals Abercorn, Recali, Oakleigh, Algerian, Remus, Silver Prince (a magnificent New Zealand-bred horse), Cranbrook, Tranter, Paheka, and the Charmer. Sardius, the other competing horse, did not finish the course, being distanced early in the race.

The subjoined table shows the winners of the Melbourne Cup for each year since its inauguration in 1861, with the names of the sires, and the age, amount of weight carried, and the time of each winner:

Year.	Winner.	Sire.	Age.	Weight.	Time.
			<i>Years.</i>	<i>Lbs.</i>	<i>Minutes.</i>
1861	Archer	William Tell.....	5	77	3.52
1862	Archer	William Tell.....	6	142	3.47
1863	Banker	Boiardo	3	74	3.44
1864	Lantern	Muscovado	3	87	3.52
1865	Toryboy.....	Wollaton	<i>a</i>	98	3.44
1866	The Barb.....	Sir Hercules	3	95	3.43
1867	Tim Whiffler	New Warrior	5	123	3.39
1868	Glencoe	Lord of the Hills	4	127	3.42
1869	Warrior	New Warrior.....	6	122	3.40
1870	Nimblefoot	Panic.....	<i>a</i>	87	3.37
1871	The Pearl	New Warrior.....	5	101	3.39
1872	The Quack	Peter Wilkins.....	6	108	3.39
1873	Don Juan.....	Lucifer	4	96	3.36
1874	Haricot.....	Ladykirk	4	91	3.37½
1875	Wollomai.....	Ace of Clubs	6	106	3.38
1876	Briseis	Tim Whiffler (imp.)	3	88	3.36¼
1877	Chester	Yattendon	3	96	3.33½
1878	Calamia	Maribyrnong	5	114	3.35¾
1879	Darriwell.....	Tim Whiffler (imp.).....	5	102	3.30¾
1880	Grand Flaneur.....	Yattendon	3	94	3.34¾
1881	Zulu	Barbarian	4	80	3.32½
1882	The Assyrian	Countryman	5	111	3.40
1883	Martini-Henry.....	Musket.....	3	103	3.30½
1884	Malua	St. Albans.....	5	135	3.31¾
1885	Sheet Anchor.....	St. Albans.....	<i>a</i>	109	3.29½
1886	Arsenal.....	Goldsborough.....	4	102	3.31
1887	Dunlop.....	Neckersgat	5	117	3.28½

AUSTRALIAN HORSES IN THE UNITED STATES.

The Australians, through the public press, are deploring the purchase of so many of their famous race-horses by Senator Hearst, Mr. J. B. Haggin, and other California capitalists. The loss of Darebin was described "as little short of a calamity to breeders." This magnificent horse was purchased by Mr. Bruce Lowe for Mr. Haggin at a cost of £1,980 (\$9,634), and shipped to that gentleman in July, 1886. A few months afterwards an effort was made to purchase Darebin for the colony, and it said that an offer of £5,000 (\$24,332) was made for him by cable, but that Mr. Haggin refused to part with his purchase. Darebin was sired by Musket, a famous New Zealand race-horse, whose extended pedigree I gave in my report on horse-breeding, published in No. 12, of the CONSULAR REPORTS, August, 1882. Subsequently Sir Moredred, another superb horse owned formerly by Mr. Henry Driver, the United States consular agent at Dunedin, was sent to California. This horse has attracted no little attention in America where its progeny commands extraordinary high prices. The next importation to America was Cheviot, a full brother to Sir Moredred. Cheviot is a bright bay, 16 hands high, head finely formed, nostrils wide, ears tapering, and neck, shoulders, and withers of marvelous beauty and muscular development. He is by Traucer out of Idalia, and has on his sire's side the famous Touchstone blood. The shipment of Cheviot was followed by True Briton, Goldsborough, and

near Richmond, New South Wales. He was got by John Bull out of Ruby, and is now being trained for the Oakland race-course by Mr. Haggin, who predicts a brilliant career for him on the turf. He is of a beautiful glossy, black color, with slight, graceful limbs. The favor with which these horses were received in the United States induced Mr. J. K. Newton to purchase seventeen others for that market, six of which were shipped to San Francisco, on board the steam-ship *Mariposa*, on the 22d of February last. Five of these consisted of yearlings and the remaining one was the two-year-old colt *Derelict*, so favorably noticed at the centennial exhibition held here in January last. *Derelict*, although placed second in the list, would have carried off the prize if he had been properly prepared for the exhibition. He is the son of *Robinson Crusoe*, one of the most celebrated race-horses in Australia and winner of the Derby and St. Leger. The Stud Book of Australasia contains no record of better blood, for in his family are included such famous winners as *Navigator*, *Trident*, *His Lordship*, *Angus*, *Scandal*, *Acolyte*, *Onyx*, *Sylvia*, *Charon*, etc., all descendants of the celebrated *Fisherman*. In tracing his pedigree still further we meet with such famous names as *Orvilla Bay*, *Mid-dleton*, *Touchstone*, *Sir Hercules*, *Eclipse*, etc. The second colt of Mr. Newton's purchase was a chestnut filly by *Somnus* (imported) from *Geraldine* by *Yattledon* from *Atholine* dam of *Habena*, *Narina Blairgowrie* and *Huntingtower*. The third animal was also a chestnut filly by *Astrocas*, sire *Zeegus* the *First and Romping Girl*. *Romping Girl*, as all Australian turfmen know, is the dam of *Masquerade*, the winner of the Metropolitan stakes and the Sydney Cup. The fourth colt was a beautiful bay by *Epigram* and *Helen McGregor*. Both sire and dam have a wide reputation. *Epigram* got *Le Grand*, winner of the champion race of the Australian Jockey Club, Derby, and St. Leger. The fifth colt was by *Maribyrnong* and *Fair Duchess*. This colt has the blood of some of the most celebrated race horses in Europe and Australasia. The sixth colt is by *Somnus* (imported) and *Maid of the Hills*, the former having in his veins two strains of the celebrated *Touchstone* blood. The record of these colts in America will be watched with no little interest in Australia. It is the first time that any of their blood has found its way to the States on the Pacific slope, or indeed in any other part of the United States. For some reason its value has been overlooked there, and it was not until it attracted attention in Australia that American stock-farmers sought to mingle it with that of some of their own famous racers.

In addition to the horses already mentioned about half a dozen others have been purchased for the American market, and Mr. Andrew Towns, of Hobartville, who has the largest and most complete stud farm in Australia, is paying special attention to breeding horses so as to foal to American time. In Australia being directly opposite to those in America, it is

Breeding Association of the Pacific Slope has announced its intention to grant certain concessions to all horses foaled south of the equator, so as to compensate for the disadvantages they labor under in regard to age, and it is said that other breeding establishments in America will make similar concessions.

AMERICAN TROTTERS.

Very little attention has been paid heretofore to the training of roadsters in Australia. The taste of the people, however, is now changing in that respect. The trotting matches at Elsternwick Park, near Melbourne, and those of the Sydney Park Driving Club, at the Agricultural Grounds, near Sydney, are daily becoming more and more popular, and it is said that that this sport is also becoming popular at Adelaide and other cities in Australia. This should be very gratifying to the public inasmuch as the sport of trotting leads to something of a direct practical value. The race-horse, strictly speaking, is of little use or interest, except to the turfmen, and is seldom seen off the race-track, whilst the trotter is not only a useful animal in the buggy and carriage, but is a fascinating sight on the road, giving pleasure and recreation to thousands in every day life. Amongst those to whom credit is due for encouraging the sport of trotting in Australia are Dr. Weir, of Melbourne, the Hon. James Miller and Dr. George F. Slate, of Sydney, and Mr. Andrew Towns, of Hobartville. The last-named gentleman purchased in the United States the celebrated stallion Contractor. Mr. Towns also purchased for Australia Honesty and Child Harold. The latter is by Harold, the sire of Maud S. Dr. Slate has recently imported from America the fine stallion Doncaster and several valuable mares for breeding. It was through the influence of Dr. Slate that Mr. F. B. Baldwin, of New York, visited the colonies. Mr. Baldwin first introduced here the modern method of booting and driving, and the method has become so popular that almost every horse on the track is now provided with boots. Dr. Slate is the owner of Heron, one of the fastest trotters in Australia. Heron is full brother to Belle Hamlin, for which Mr. C. J. Hamlin refused the sum of \$30,000. Belle Hamlin's record for 1 mile is two minutes, thirteen and three-quarter seconds. The centennial champion prize for the best colonial-bred trotting stallion was won by Burlington, owned by Mr. A. L. Faithful, of this colony. This valuable horse was secured to New South Wales through the visit of Mr. E. R. Deane to the United States in 1884. Mr. Deane traveled from Maine to California in search of suitable horses, and finally purchased two mares with foal by Bob Mason, whose sire was Echo son of Rysdyke's Hambletonian. The result of the purchase was Burlington and a filly, both foaled in New South Wales in June, 1885. Burlington is a magnificent horse for his age, a perfect picture of strength and symmetry.

THE MULE.

The almost total absence of the mule in the Australasian colonies has been the subject of much comment on the part of Americans visiting, and several attempts have recently been made to introduce this valuable animal.

parts of the great island continent. Its good qualities for packing purposes are said to have just been discovered in the northern territory. A mule breeding establishment has been started by Messrs. Tooker Brothers, at Lenra Station, near Rockhampton, Queensland. These gentlemen have secured the services of a pure-bred Spanish jack at a cost of £157.10 (\$766.47), and mules 17½ hands high have been produced. The value of the mule has long been fully appreciated by those accustomed to its use. The Spanish colonies in North and South America employed it almost exclusively for climbing among the mountains in Chili, Peru, and Mexico, for which it is so well adapted.

The Spanish colonists never traveled with much fodder, and the mule and its father the jack suited them in being able to pick up a living on the plants in the mountainous countries. The use of the mule has given much satisfaction in California, where it is not only used as a pack animal, but for plowing and reaping in the wheat fields. It is not claimed that the mule can do more work than the horse, but it can live on less and go longer without water, and stand more abuse, hence its suitability to mountainous districts, but in a country like Australia it is probable that the horse and ox will always be preferred and especially when large, strong Clydesdales and Cleverlands can be purchased at the present low rates prevailing in Australia; moreover, the camel, which has been successfully introduced into Australia, is a long way ahead of the mule as a packing animal. Camels were brought here in the early history of the country and were found to do well. Afterwards they were allowed to run wild and when recaptured proved to have deteriorated very little. They are now extensively used throughout the northern territory, especially for packing, to and from the gold mines, where the distance is great and the supply of water short along the route. — SYDNEY, April 10, 1888.

G. W. GRIFFIN,
Consul.

AUSTRALASIAN RAILWAYS.

There are more miles of railway in the Australasian colonies in proportion to the population than in any other country in the world, with the single exception of the United States of America. The number of miles of railway open in the whole of the group on the 31st of December, 1887, was 3,305, and estimating the population at 3,500,000 there would be 380 persons to every mile of line. In Great Britain there are 1,895 persons to every mile of railway; in France, 2,110; in Germany, 2,063; but in the United States,

	Miles.
New South Wales.....	1,924
Victoria.....	1,888
Queensland	1,655
South Australia.....	1,572
Western Australia.....	154
New Zealand.....	1,809
Tasmania	303
Total.....	9,305

It will be seen from the preceding table that New South Wales is in advance of every other colony in the group and that Victoria ranks second and New Zealand third. In addition to the lines already open there are nearly 2,100 miles under construction, and of the latter New South Wales has 367, Victoria 316, South Australia 417, Queensland 637, West Australia 46, Tasmania 138, and New Zealand 171 — giving a total of 2,092 miles. Other lines are shortly to be built, and large sums have been voted for the purpose in every one of the colonies.

The first railway projected in Australia was in 1846, when it was proposed to connect Sydney with Goulburn. A survey was made to Parramatta and Liverpool in 1848, and on the 3d of July, 1853, the first turf was turned by the Honorable Mrs. Keith Stewart in the presence of her father, Governor Fitzroy, and a large number of spectators. The road was opened between Sydney and Parramatta, a distance of 15 miles, on the 26th of September, 1855. A line was projected in 1853 from New Castle to Maitland, but it proved a failure. Both lines were started by private companies, and as neither was successful they were transferred to the Government. The first railway opened for traffic in South Australia was in 1856. It was $7\frac{1}{2}$ miles in length and connected Adelaide with Semaphore. The North Line in the same colony was opened to Smithfield in 1857, and was $18\frac{3}{4}$ miles in length. In 1870 there were only 948 miles of railway open in Australasia of which New South Wales had 335, Victoria 274, Queensland 206, South Australia 133, West Australia *nil*, Tasmania *nil*, New Zealand *nil* — total 948. The rapid increase in the number of miles since that period affords a striking illustration of the marvelous energies and capabilities of the people.

The following table shows the number of miles of railway in operation in Australasia for each year from 1870 to 1887 inclusive:

	Miles.
1870.....	948
1871.....	948
1872.....	948
1873.....	1,429
1874.....	1,781
1875.....	2,323
1876.....	2,783
1877.....	3,472
1878.....	3,778
1879.....	

	Miles.
1880.....	4,852
1881.....	5,471
1882.....	6,207
1883.....	6,715
1884.....	7,497
1885.....	8,045
1886.....	8,903
1887.....	9,305

There is now railway connection between each of the metropolitan cities of Australia, viz: Sydney, Melbourne, Adelaide, and Brisbane. Three trunk lines start from the Queensland coast and stretch for many miles toward the far west.

THE HAWKESBURY BRIDGE.

The magnificent bridge now rapidly approaching completion is of special interest to Americans from the fact that it is being built by the Union Bridge Company, of New York. It is intended to connect Sydney by a double line across the Hawkesbury River with the Great Northern system of railways. As the Queensland road has been completed to the New South Wales border the bridge over the Hawkesbury is the last remaining link to connect Sydney and Brisbane. The road from Sydney to the Hawkesbury necessitated very heavy work, such as tunneling, rock cutting, and long lengths of timber trestles. After leaving the junction, 14 miles west of Sydney, the Parramatta River is crossed by a wrought-iron bridge with six openings of 150 feet each; the road leads through a very rough and uninviting country. The point chosen for crossing the Hawkesbury is 15 miles from the sea-coast and 36 miles from Sydney. The railway, after passing over a shallow branch of the river, enters a tunnel through Long Island, and emerges on the banks of the main channel about 45 feet above high water.

The Hawkesbury River takes its rise on the eastern slope of the Blue Mountains, and with its branches drains an area of about 8,700 square miles. The tide at the point of crossing varies from 3 to 6 feet, and runs, under certain conditions, from 3 to 4 miles per hour. The total length of the bridge is 2,896 feet. There are five spans of 416 feet each between centers of piers, and two spans of 408 feet each. It is, in fact, the largest bridge in the southern hemisphere, and in one respect unparalleled, viz, it having the deepest foundation in the world. Sound bottom is only reached at a depth of 170 feet from water level. Mr. Charles A. Goodchap, the New South Wales commissioner for railways was especially desirous that competition for this stupendous work should be thrown open to the whole world; therefore, instead of calling for tenders in the usual way from plans furnished by the chief engineer it was determined to invite manufacturers to submit their own designs

1 of the following gentlemen: Doug-

Peninsular and Natal Railways, were appointed to receive and report upon the tenders. It was at the same time arranged that Sir John Fowler, the Government consulting engineer in London, should furnish an independent report upon the tenders and designs, and that the whole should be subject to the final recommendation of Mr. John Whitton, the engineer-in-chief of New South Wales. The plan of inviting manufacturers to tender their own designs, although not uncommon in the United States was hitherto without precedent in the colonies and very naturally attracted both here and in Europe no little attention. The tenders varied from £296,350 (\$1,441,703) to £702,384 (\$3,418,151). I am indebted to the commissioner for railways of this colony for the subjoined summary of the tenders and designs which the board of engineers considered eligible:

Name of tender.	Amount.	Time.	Main features of design.	
			Piers.	Superstructure.
Edgemoor Iron Company, Wilmington, Del., U. S. A.	£296,350	2 years...	20 cylinders, in pairs, 20 feet diameter at base.	American lattice type, pin fastenings; span, 292 feet.
Union Bridge Company, New York.	327,000	2½ years.	6 caissons, 52x24 feet at base, with semicircular ends.	American lattice type, pin fastenings; span, 415 feet.
Fforde & Young, London..	377,500	3 years...	20 cylinders, 10 feet 6 inches, in pairs.	Cantilever, lattice type.
Royce & Co., and Butterley Company, London.	403,367	3 years...	24 cylinders, 16 feet, in pairs..	Riveted lattice, curved upper boom; main spans, 238 feet 6 inches.
A. Handyside & Co., England.	456,000	3 years...	22 cylinders, 15 feet, in pairs..	Riveted lattice, straight top; main spans, 262 feet.
Arroll Brothers, Glasgow, Scotland.	580,000	4 years...	7 caissons, 70x33 feet, elliptical.	Riveted lattice, curved upper boom; main spans, 432 feet.
Reichenbach, Godfrey & Jones, London.	466,032	No time..	8 caissons, rectangular, 54 feet 3 inches by 22 feet.	Cantilever lattice, continuous, 392 feet and 311 feet alternately.
John Dixon, London.....	486,100	2 years...	36 cylinders, 10 feet, in groups of four.	Riveted lattice, curved upper boom; spans, 251 feet.
R. M. Parkinson, London..	584,898	4 years...	8 cylinders, 40 feet in diameter.	Riveted lattice, continuous throughout; spans, 338 feet.
Fives-Lille & Co., Paris....	515,004	4 years...	6 caissons, circular, 57 feet 5 inches diameter at base.	Bow strong, with stiffened arc; spans, 550 feet.
D. Munroe, Melbourne, Victoria.	702,384	3 years...	20 cylinders, 14 feet, in pairs.	Fish belly, in lattice type; spans, 389 feet 6 inches.

Sir John Fowler recommended that the board should adopt the plans and designs of the Union Bridge Company, of New York. The tender of the other competing American firm, the Edgemoor Iron Company, was lower than that of the Union Bridge Company, but Sir John Fowler thought that as the former had to sink twenty piers against six of the latter, it would be better to accept the one with the least number of piers, as it was evident that on account of the difficulty of sinking caissons and cylinders, the reduced number and larger size of the caissons, had a decided advantage. Sir John also thought that the larger spans of the Union Bridge Company's superstructure were superior to the smaller ones of the Edgemoor Company. Mr. Whitton, the New South Wales engineer-in-chief, also approved of the tender, plans, designs, etc., of the Union Bridge Company, with certain modifications and alterations, and for these changes the company was to receive the additional

800 (\$1,731,504). The contract for making the piers was awarded to Messrs. Anderson & Barr, who performed so successfully similar work for the Atchafalaya bridge on the Texas and Pacific Railway in 1883, where the foundations were sunk to a depth of 125 feet.

I visited the Hawkesbury bridge on the 29th of March last in company with Capt. W. Law, of this city, who for some time has taken much interest in the progress of the work there. Mr. J. F. Anderson, senior member of the firm of Messrs. Anderson & Barr, afforded us every facility for seeing the bridge. Mr. Anderson stated that there was every reason to believe that the bridge would be completed in contract time, and that his own part was so far advanced as to allow him to proceed shortly to the United States. From information placed at my disposal by Mr. Anderson, I learn that each of the six piers consists of a wrought-iron caisson, with three central tubes which assume a conical shape towards the bottom, thus forming a cutting edge. The caisson is sunk by excavating through the tubes. When complete, or sunk in a proper position, the caisson and tubes are fitted with concrete, and ashler masonry is continued from low-water mark to the underside of the girders, which rest upon the stone-work. No. 1 caisson was commenced on the 4th of August, 1887, and finished on the 23d of last November; it has been sunk to a depth of 56 feet in the bed of the Hawkesbury, and 3,062 yards of concrete were used in filling it, the total weight of caisson being rather more than 213 tons. No. 2 caisson is in course of construction, about 240 tons of iron having been used up to date. The third caisson is also in course of construction, 278 tons of iron having been used so far as the work has gone. No. 4 was commenced on the 23d of February, 1887, and completed to receive masonry on the 27th of last July. This caisson has gone down to a depth of 120 feet in the river bed. It weighs more than 287 tons, and 4,628 yards of concrete were used to fill it. No. 5 caisson was put in position on the 6th of December, 1886, and although some difficulty has been experienced in keeping it within line, the trouble is being overcome and the work rapidly pushed forward, 295 tons of iron-work and 3,000 yards of concrete have been used in the construction of this pier. No. 6 caisson was commenced on May 6, 1887, located on the 18th of the same month, and the work on it is proceeding satisfactorily. The following figures show the depth of water at the several piers at low tide: No. 1 pier, 37 feet 6 inches; No. 2, 40 feet; No. 3, 40 feet; No. 4, 20 feet; No. 5, 18 feet 6 inches; No. 6, 46 feet 6 inches. Messrs. Morse & Ryland are the contractors for the superstructure and they have their work well in hand. The superstructure is being erected on a huge punt, 330 feet long, 60 feet wide, and 10 feet deep. The punt is built in forty-eight water-tight compartments. A gigantic trestle more than 40 feet high has been firmly built upon the punt, and upon this bridge will be constructed. When the span between the

down into its proper position on the piers. When the whole of the spans are completed the bridge will be ready for use. All the superstructure is of mild steel, having an ultimate tensile strength of not less than 67,000 pounds and not more than 73,920 pounds per square inch of section. One of the requisites is that when heated to a cherry red, and cooled in water of 82°, the test piece cut either lengthwise or crosswise from the material must bend double without flaw or crack to a curve having an inner radius of one and a half times the thickness of the plates.

COST OF CONSTRUCTING AUSTRALASIAN RAILWAYS.

The total cost of the construction of the Australasian railways is estimated at £85,503,210 (\$416,091,360). The average cost per mile for several years has been about £10,102 (\$49,161). The highest average, £13,634 (\$66,349), is in Victoria, and the lowest, £4,038 (\$19,650), in Western Australia. The following table shows the average cost per mile in each colony:

Victoria.....	£13,634 = \$66,349
New South Wales.....	11,994 = 58,368
Tasmania.....	7,820 = 37,990
New Zealand.....	7,656 = 37,190
South Australia.....	6,862 = 33,371
Queensland.....	6,614 = 32,181
Western Australia.....	4,038 = 19,650

The variation in the cost of construction is principally due to the condition of the country over which the road is built. Sometimes cheaper material is used than at others. The cost of construction is nothing like as heavy as in Great Britain and other European countries.

The estimated cost of the railways in Great Britain is £49,984 (\$243,246) per mile. In Belgium it is £36,522 (\$177,736), and in France £27,580 (\$134,217). Mr. Charles A. Goodchap, the New South Wales commissioner for railways, to whom I am indebted for much of the material of this report informs me that when the colonies followed the principle of English railway construction, such as the adoption of air lines instead of surface lines, they were found to work badly. To illustrate the difference between the two methods, I will mention that air lines are those in which the rails are at all times intended to be built above flood levels like the lines in this colony and which cost about £12,000 (\$58,398) per mile. Surface lines are built on the principle of following the natural surface of the ground as nearly as possible without appreciably obstructing the natural flow of flood waters, that is, they are built intentionally below flood level. The cost of such lines does not exceed £2,700 (\$13,129) per mile. There are 600 miles of surface lines in the colony of Queensland, and the cost has not exceeded £2,700 (\$13,129) per mile, even at a distance of 300 miles from the nearest sea-port. Mr. Goodchap is of opinion that surface lines are better suited to new countries than those built upon the English method. He says that the surface lines are

pable of carrying the traffic for at least twenty years to come. On parts of the central division and the northern division in Queensland, where surface lines have been adopted, the sleepers and rails are of the same weight as in other parts of the colony, but the amount of ballast is considerably less, averaging only from 500 to 700 cubic yards to the mile and does not reach above the bottom of the sleepers.

I learn from an able and elaborate paper, prepared for me by Mr. Max Thomson, A. M. Institute of Civil Engineers, that very few, if any, embankments occur on the surface lines introduced into Queensland, and that there are no cuttings except for the necessary gradients. Where the line crosses water-courses or rivers it does so by means of low level bridges or fords providing only sufficient headway for ordinary storm water, but in cases of heavy floods the railway crossings are entirely submerged, in one case as much as 50 feet. These heavy floods, however, subside quickly and leave the railway track clear for traffic. In New South Wales until recently arched culverts were constructed of stone or brick, but lately they are made of concrete. The same remarks apply to tunnels. Open culverts and bridges up to 26 feet span are constructed in the first instance with timber superstructures on pile piers, but as occasion requires them to be removed they are reconstructed with iron superstructure on brick or iron piers.

The surface lines in Queensland were introduced by Mr. R. Ballard, M. I. C. E., but a new scheme of surface lines has just been proposed for that colony by Mr. Phillips, C. E. The main feature of Mr. Phillips's scheme is to adhere as closely as possible to the natural surface of the ground in order to avoid embankments in places with the attendant interruptions to natural draining, thus doing away with the necessity for frequent flood opening. Ballast is not employed in the ordinary way, the sleepers being mostly filled in with the adjacent soil. To avoid troubles Mr. Phillips has designed certain kinds of steel sleepers. The sleepers, although intended for a narrow gauge, can be made to suit any gauge. Those for the narrow gauge are 3 feet 6 inches, and 5 feet long, and 8 inches wide at the top, and 10 inches at the bottom and 8 inches deep. They are so laid that the bottom of the rail reaches 4 inches above ground, the space above ground being packed with soil taken from adjacent land.

WORKING EXPENSES.

The working expenses of the Australasian roads are usually heavy both on the continent and on the islands of Tasmania and New Zealand. They are perhaps heavier in New South Wales than in any of the other colonies, the estimate for New South Wales being £834 (\$4,058) per mile against the estimate for New South Wales being £252 (\$1,713) for West Australia,

Colony.	Net earnings.	Proportion of working expenses.	Net earnings.	Percentage to capital expended.
New South Wales.....	£667,078 = \$3,246,334	69.12	£373 = \$1,810	2.901
Queensland.....	216,122 = 1,051,572	68.82	139 = 676	2.128
South Australia.....	178,438 = 868,568	67.50	164 = 798	2.37
Victoria.....	1,025,962 = 4,992,843	38.18	573 = 2,788	4.15
Western Australia.....	2,694 = 13,106	87.05	37 = 180	.70

The heavy working expenses in New South Wales are principally due to the heavy grades of the roads. On the Western Line, which crosses the Blue Mountains, the ascent is affected by zigzags with grades of 1 in 30 and curves of 8 chains radius which also occur at various points until the summit of the range is reached. Up to this point the earth works are of a heavy nature, and in many places deep cuttings and long tunnelings are met with. On the Northern Line a gradient of 1 in 30 for 3 miles is employed to ascend the mountains, the remaining part of the line being constructed with gradients of 1 in 40 as a maximum, with heavy cuttings and tunnelings. After descending the mountains the road is comparatively smooth. In Victoria the works are not usually as heavy as in New South Wales, the heaviest gradients in Victoria being 1 in 40; the minimum radius of curves is 15 chains, and the cuttings and tunnels are not extensive. In New South Wales the locomotives in many cases have to be assisted by pilot engines. Indeed, until the commissioner for railways introduced the consolidated locomotive from the United States, it was no uncommon thing to see ordinary passenger trains drawn by two locomotives over comparatively level country. The consolidated locomotives are capable of drawing nearly double the weight of the old ones.

The working expenses of the roads in New Zealand are very heavy, but the introduction of American locomotives and other rolling stock is causing a marked reduction in the expenditures. At the end of March, 1887, the revenue from the railways in New Zealand was £998,768 (\$5,229,270), and the expenditures £699,072 (\$3,401,350). The tonnage during the year was 1,747,754, and the number of passengers carried 3,426,407. The subjoined table shows the amount of traffic in local production in New Zealand for each year ending March 31, from 1879-'80 to 1886-'87:

Year.	Wool.	Timber.	Grain.	Minerals.	Horses and cattle.	Sheep and pigs.
	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>No.</i>	<i>No.</i>
1879-'80	41,895	149,428	240,144	321,060	30,393	260,816
1880-'81	42,387	169,695	421,142	406,266	27,230	280,683
1881-'82	44,681	192,905	375,725	433,659	32,511	319,837
1882-'83	51,703	197,231	367,428	510,088	37,455	449,470
1883-'84	62,066	183,449	432,223	574,312	39,230	656,612
1884-'85	68,523	178,909	414,590	618,512	43,096	696,790
1885-'86	74,778	202,572	413,847	669,081	46,152	822,028

AUSTRALASIAN RAILWAYS.

IMPORTS OF RAILWAY MATERIAL.

The average annual imports of railway material into the Australasian colonies is about 85,000 tons. Of this New South Wales imports a larger quantity than any other colony. Her imports of such material during the year ended December 31, 1887, was 17,181 tons valued at £298,327 (\$1,451,590).

The subjoined table is an abstract of the returns of the material imported by the New South Wales department for railways during the year 1887: Number of ships, 128; number of tons, 27,181; value of material shipped, £298,327 (\$1,451,590); amount paid for freight, £20,125 12s. 10d. (\$97,941.02); amount paid for insurance, £2,361 17s. 8d. (\$10,341.12); average rate of freight per ton, 17s. 9¾d. (\$4.26½); average rate of insurance, 1s. 9d. (\$0.42).

ROLLING STOCK.

The commissioner for railways in a recent report directs attention to the fact that the engines in use on the lines in New South Wales are more heavily worked than in any other country in the world, with the exception of the United States. During last year fifty-two locomotives ran between 30,000 and 40,000 miles, and three over 40,000 miles. I am indebted to the commissioner for railways for the subjoined statistics showing the average mileage per engine on roads in the various parts of the world:

Germany.....	11,870
Austria.....	11,842
Belgium.....	13,335
France.....	16,798
Italy.....	15,118
Great Britain.....	18,395
India.....	19,606
United States.....	22,583
New South Wales.....	20,362

The reader will readily understand from the preceding table the amount of work required by the New South Wales engines. It appears from some valuable and interesting notes placed at my disposal by the commissioner for railways that he is decidedly in favor of increasing the hauling power of the engines by abandoning the English formula and adjusting the distributing weight of American practice. The commissioner states: "The question of the tare of vehicles proportioned to their carrying capacity is one of great interest in all parts of the world, but in the United States, by the aid of the Car Builders' Association, it has not been a scientific question, but by discussion and experiment has been elevated to a science in itself." In England and it is seldom that the freight on their lines

(\$3.81) per train mile. It is said however that generally, except in carrying coal, they do not get train-loads of 400 tons net. The exigencies of the traffic would not admit of trains being kept until such loads accumulated, so that only special classes of traffic such as coal, ironstone, slate, etc., can be hauled at the low rate quoted. The commissioner says: "If we should apply the principle of constructing our rolling stock to English practice we would be unable to earn anything above the cost of working. In the early days of our railways our rolling stock was designed to English patterns, but in recent years we have not only imported American designs, but we are aiming to construct our stock on principles laid down by the Locomotive Engineers and Car Builders' Association of the United States. We want engines which, while not weighing more than 12 tons on any one pair of wheels, will take 200 tons up a grade of 1 in 40 for 3 miles, and we want vehicles which will admit of two-thirds of this 200 tons being revenue-saving freight. We will have the sympathy of the railway experts all over the world who, having heavily graded lines to make, know the importance of the question, and we expect special encouragement from the United States, which, by precept and example, has led the van of progress in this important direction."

GAUGES.

The Australasian colonies have utterly failed to profit by the experience of other countries in regard to the question of constructing their railways with one uniform standard gauge, and the result is that the roads in no two colonies touching one another have the same gauge. The width of the gauge in New South Wales is 4 feet 8½ inches. In Victoria it is 5 feet 3 inches. In South Australia there are two gauges — 5 feet 3 inches and 3 feet 6 inches. In Queensland, Tasmania, and New Zealand the gauge is 3 feet 6 inches. The Victorian roads touch the border of New South Wales in three places, and freight passing from one colony to the other has to be transferred to other cars at considerable expense, not to mention the delay and other inconveniences resulting from such course.

A singular fact in connection with the question of a uniform gauge is that although New South Wales, Victoria, and South Australia began the construction of their roads at nearly the same time, it was nevertheless determined to have a different gauge in each colony. While it is admitted that at first some advantage in economy is gained by the construction of light narrow-gauge roads in thinly populated districts, there can be no doubt, as experience has shown, that in the long run a substantially built road of standard gauge is the best plan to adopt. The policy now recommended is to put down in the first instance cheap lines rather than light ones, using heavy rails, but effecting a saving in sleepers and ballast, so that as traffic increases the lines can be made suitable for it at little additional expense. One of the advantages New South Wales experiences in having a standard gauge is that she is enabled to procure locomotives and other rolling stock of precisely the same

sion and inconvenience incident to mixed gauges in the colonies will sooner or later lead to the establishment of a uniform gauge, and it is said that an intercolonial commission will shortly be appointed for the purpose of settling definitely this vexed question.

SIGNALING.

The semaphore method of signaling is principally used on the Australasian railways. Each station or junction is provided with home or distant signals for trains traveling in both directions. At stations where interlocking is not used the signals are worked by the ordinary adjusting pull-overs. All stations on the main suburban lines and on the principal country lines adopt the interlocking method. The machines are the same as those on the English lines. A special arrangement for interlocking is employed at small roadside sidings where no one is in charge. The conductors or guards—as they are called here—wishing to shunt or switch the sidings, are compelled to fix all necessary signals before they can open the points to shunt the same. When the sidings are not in use on the main lines signals are made to exhibit “All right,” and the levers of the machines are locked up in order that strangers can not tamper with them. The conductors requiring to switch the sidings are provided with a key to unlock the machine. After unlocking the machine they are compelled to set the points in proper position again and securely bolt them before the main line signals can be lowered to “All right,” and the signals must be lowered before the key can be taken out of the lock, to enable the conductors to proceed on their journey. At small roadside sidings, which can be conveniently switched by trains carrying the time staff, fixed signals are used. All sidings in direct communication with the main line are provided with either stop-blocks or safety-points to prevent vehicles from being moved or blown foul of trains running on the main line. The system of fixed signals in Victoria, South Australia, and Queensland is similar to that in New South Wales, but interlocking the points with the signals is more extensively adopted in Victoria and South Australia than in New South Wales and Queensland. The system appears to be adopted on the overland route between Adelaide and Serviceton and between Serviceton, Melbourne, and Wodonga in order, it is said, to provide additional security for express trains.

THE GOVERNMENT AND THE RAILWAYS.

All the railways in Australasia, with the exception of one or two very short lines, belong to the various colonial governments. These roads were built principally through the means of large loans negotiated by the agents-general, and their value forms one of the principal assets for the public debt. The policy of giving the control of the railways to the State is very seriously questioned, and it is the

agement of private companies. It is urged, however, by those who support the State system that the reason government-owned railways experience so much difficulty in making fair returns for the amount of capital invested is that as soon as a profit is shown the public insist upon concessions in rates or increased facilities, both of which are practically an amelioration of taxation. The difference between a State and a private railway is explained on the ground that as traffic develops in one case the public get immediate benefit from lower charges and greater facilities, and in the other the share-holders obtain a larger dividend at the end of each year's working. The railways in New South Wales at present are not as remunerative as those of Victoria, but it must be remembered that the conditions of the country over which the roads are built are altogether different. For instance, the lines in Victoria for the most part are laid down on easy grades and run through fairly settled districts. In New South Wales the settlement is scattered and the grades in many instances are very steep on account of the mountains to be crossed. The highest elevation in Victoria is only 2,452 feet, whilst in New South Wales it is 4,525 feet. In the former colony a good engine can carry through loads of 250 tons, whilst in the latter from 90 to 100 tons is considered a fair load for an engine. The management of the roads, however, in Victoria until recently was subject to severe criticism. The complaints were so bitter and continued that an act of Parliament was passed in 1883 placing the roads under the control of a board of commissioners appointed by the Government. The act went into effect on the 1st of February, 1884. The commissioners consist of three in number and are a body corporate with perpetual succession and a common seal. They hold office for a term of seven years, at the expiration of which they are eligible for re-appointment, if the governor in council should so determine. According to the act all the lines in the colony are virtually under the control of the board, which is so constituted as to be entirely removed from political influence, and the result is that the lines are said to be worked purely upon a commercial basis. The commissioners can not be removed except by an address to the governor from both houses of Parliament at the same session, or by the Legislative Assembly alone at two consecutive sessions. The board of commissioners is charged with the construction of such lines of railway as may be authorized by Parliament, as well as with the management of existing lines. They are required by the act to report quarterly to the minister for railways, and to Parliament at the end of September in every year upon all receipts and expenditures of the lines. The chairman of the board receives a salary of £3,000 (\$14,590) per annum, and each of the other commissioners £1,500 (\$7,299) per annum. The success attending the management of the Victorian railways by the commission has led to the introduction of a bill into the Parliament of New South Wales authorizing the establishment of a board of commissioners with similar powers for the control of the railways of this colony. The bill referred to has been read a second time, and as it has met with little or no opposition will shortly

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Sir Henry Parkes, G. C. M. G., the present premier of New South Wales, has from his first entrance into public life taken a lively interest in the construction of railways, and to him perhaps more than any one else the colony is indebted for the construction of its lines. He stated in a recent speech that the New South Wales railways would compare favorably with any others in the world. "Considering," he said, "the solid and permanent character of the great lines of our communication in comparison with some elsewhere, we may come to the reasonable conclusion that, though they have cost us more, they are in reality cheaper." In the same speech he drew the following comparison between the Australian railways:

into many details in relation to a question very interesting, but to which I must con-

I can not, of course, go into many details in relation to a question very interesting, but very large, and quite impossible to compass in such a discourse as that to which I must confine myself. But the longest railway in the sister colony of Victoria—that from Melbourne to Serviceton—is 312 miles. The longest railway in South Australia, from Adelaide to Hergott Springs, is 231 miles; the longest in Queensland—Queensland, remember, being a country which offers lengthy lines for railway construction, having a territory far larger than any other, if we except the northern territory of South Australia, and having points of population which can not be reached except by traveling, not scores, but hundreds, I might say thousands of miles—Queensland, this vast territorial colony, has no longer railway than that to Dalby Dilla, which from Brisbane is 410 miles. Well, this colony I find has constructed no fewer than six railways longer than the longest in Victoria. We have a railway from Sydney to Hay, 454 miles; from Sydney to Jerilderie, 412 miles; Sydney to the Queensland border, 492 miles; Sydney to Narrabri, 352 miles; Sydney to Albury, 387 miles; and Sydney to Bourke, 503 miles.

RATES OF FREIGHT.

RATES OF FREIGHT.

The freight charges on the Australasian railways are considerably greater than on the lines in the United States. It is said, however, that there are circumstances which should be taken into consideration in comparing the charges of the two countries. The people here nevertheless are constantly clamoring for the reduction of the rates. The farmers in Victoria insist that it will not pay them to grow grain unless they can get a reduction of fully 50 per cent. on the present rates. The charge usually on produce in that colony per ton for 50 miles is 5s. (\$1.22), and for 100 miles 9s. 9d. (\$2.87), and £1 6s. 10d. (\$6.52) for 400 miles.

The principal termini of the New South Wales lines running from Sydney are Albany, 386 miles, changing station at Victorian border; Bourke, 503 miles, terminus of the Western Line; and Tenterfield, 381 miles, terminus of the Northern Line. The following are the present rates on some of the principal articles on these lines: Coal, in owners' trucks, is charged for distances not exceeding 50 miles 1*d.* (2 cents) per ton per mile; minimum charge 2*s.* (48 cents) per ton. For distances over 50 miles $\frac{3}{4}$ *d.* (1½ cents) per ton. A terminal charge of 3*d.* (6 cents) per ton; minimum charge 1*s.* (24 cents) per ton. Rates to Sydney (Darling

greasy wool per ton, same distance, £4 3*d.* (\$21.74) is charged. Wheat is charged at the rate of £1 12*s.* 1*d.* (\$7.79) per ton from Bourke to Sydney, and in truck loads not exceeding 6 tons, £7 15*s.* (\$37.71) per truck. If sent from Sydney to Bourke, 20 per cent. (\$4.86) would be added. A rebate of the difference between the local tonnage rates and the through rates plus 1*s.* 9*d.* (42 cents) per ton will be allowed from country stations to country flour mills (on the up journey) and reconsigned in the shape of flour, bran, etc., to Darling Harbor (Sydney). Thus, if 100 tons of wheat are consigned during the year from Gerogery to a miller at Goulburn, 252 miles, and he reconsigns 80 tons of flour in the same period to Darling Harbor, 134 miles, the rebate would amount to £15 6*s.* 8*d.* (\$74.37). Cattle from Hay to Homebush, 446 miles, at £10 5*s.* 4*d.* (\$50.04) per truck. Sheep at £8 10*s.* 6*d.* (\$41.48) per truck.

It is stated by the railway department that the charge for carriage should be proportioned to the cost of service, and that it costs more per mile for the carriage of merchandise 100 miles than it does for carrying it 200 miles. This being the case there seems to be no just reason why those who desire to ship goods long distances should not have the benefit of proportionately decreased rates.

The subjoined table shows the average freight rates on the railways in the principal Australasian colonies during the year 1887, in English money :

	All produce, except hay, straw, and chaff.		Hay.		Straw and chaff.		
	Per ton.	Per ton in truck loads.	Per truck.	Average per ton in truck loads.	Per truck.	Straw, average, per ton.	Chaff, average, per ton.
	<i>s.</i> <i>d.</i>	<i>s.</i> <i>d.</i>	<i>s.</i> <i>d.</i>	<i>s.</i> <i>d.</i>	<i>s.</i> <i>d.</i>	<i>s.</i> <i>d.</i>	<i>s.</i> <i>d.</i>
New South Wales	50	5 4	24 0	5 5	24 0	5 10	4 8
	100	9 9	31 9	7 2	28 1	6 10	5 5
	150	13 6	43 11	9 11	38 10	9 6	7 6
	200	16 10	54 9	12 4	48 5	11 10	9 5
	300	21 10	71 0	16 1	62 11	15 4	12 2
	400	26 10	87 3	19 9	77 2	18 10	14 11

		All produce, except hay, straw, and chaff, per ton.	Hay.		Straw and chaff.	
			Per truck (loose).	Per ton (pressed).*	Straw (loose), per truck.	Straw (pressed) and chaff, per ton.*
			<i>s.</i> <i>d.</i>	<i>s.</i> <i>d.</i>	<i>s.</i> <i>d.</i>	<i>s.</i> <i>d.</i>
Victoria	50	5 6	26 0	7 6	24 0	7 6
	100	10 6	41 0	13 6	39 0	13 6
	150	15 0	54 4	17 8	52 4	17 8
	200	17 0	67 8	21 10	65 8	21 10

AUSTRALASIAN RAILWAYS.

	All produce, except hay, straw, and chaff, per ton.	Hay.		Straw and chaff.	
		Per truck (loose).	Per ton (pressed).	Straw (loose), per truck.	Straw (pressed) and chaff, per ton.*
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
South Australia.....	50	8 4	50 0	10 5	50 0
	100	13 7	100 0	20 10	100 0
	150	17 9	150 0	30 9	150 0
	200	21 11	200 0	40 1	200 0

	All produce except hay, straw, and chaff, per ton.	Hay.		Straw and chaff.		
		Per ton (pressed to measure, 15 cubic feet per cwt.)†	Per ton pressed to other dimensions.†	Per ton (pressed to measure, 15 cubic feet per cwt.)†	Per ton pressed to other dimensions.†	Chaff (in bags), per ton.†
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
Queensland.....	50	10 10	16 3	10 10	16 3	29 2
	100	19 2	28 9	19 2	28 9	54 2
	150	27 6	41 3	27 6	41 3	75 0
	200	35 10	53 9	35 10	53 9	95 10

	All produce, except hay, straw, and chaff, per ton.	Hay, per truck.	Straw and chaff, per truck.
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
New Zealand	50	10 2	26 10
	100	14 4	43 6
	150	18 6	56 0
	200	22 8	68 6

*Straw — minimum, 5 tons per truck. Chaff — minimum, 3 tons per truck.
 † Loose hay is not carried on the Queensland railways.

The rates on coal via the Great Western Railway, New South Wales, are 1*d.* (2 cents) per ton per mile for distances not exceeding 50 miles; minimum charges 2*s.* (48 cents). For distances over 50 miles $\frac{3}{4}$ *d.* (1½ cents) per ton per mile, with a terminal charge of 3*d.* (6 cents) per ton.

ACCIDENTS.

The comparative freedom from accidents on the Australasian railways is especially worthy of mention. Indeed, for a term of years the lines in South Australia and Queensland were wholly free from accidents.

The heaviest loss in any one year on the Victorian lines up to 1885-'86 was 38 out of 42,511,014 passengers carried. In 1886-'87 the number in-
 vent at Windsor, the most disastrous

TRANSCONTINENTAL LINES.

There are several lines of railway in the course of construction across the Australasian continent. For some years past both the colonies of South Australia and Queensland have been desirous of joining their respective southern and eastern shores by railway with the Indian Ocean, the terminus of the South Australian line being at Port Darwin, and that of Queensland at the Gulf of Carpentaria. Three trunk lines now start from the eastern Queensland coast and stretch for about 500 miles each towards the west. An influential English syndicate offered in 1883 to connect the western extremities of these lines by a transcontinental line with the Gulf of Carpentaria, but the proposal to do this on the land grant system did not meet the approval of Parliament. There can be but little doubt, however, that in the early future the Government of the colony will undertake the work and Normanton, it is said, will be its terminus on the gulf. Normanton is an important township with telegraph station, money-order office, and government savings bank. The town is situated on Norman River, about 25 miles from its mouth, and, according to a recent survey for the overland route, 1,382 miles northwest of Brisbane. A railway is now being constructed from Cairns, on the Pacific westward, and another from Normanton, on the gulf, eastward, both meeting in the celebrated gold field of Croydon. By this passengers from New South Wales to Normanton will soon be able to avoid the circuitous navigation through Torres Straits.

The South Australian Government has authorized the construction of a railway to connect Adelaide with Port Darwin, a distance of nearly 2,000 miles; but this ambitious work on the part of a sparsely-populated colony is necessarily a matter of time, though well commenced from both sides. Northward from Adelaide it is completed or under contract to Angle Pole, some 800 miles, and similarly under contract for a distance of 120 miles southward from Port Darwin. It is said by the Hon. Fane de Salis, member of the legislative council of New South Wales, and an able and painstaking writer on Australasian affairs, that passengers from Sydney will probably in the course of a few years reach the Adelaide and Port Darwin transcontinental at Tarina, between Lake Eyre and Torrens, by a New South Wales railway through Wilcannia, on the Darling River. Similarly, passengers from Sydney will reach the Queensland transcontinental line via Bourke (higher up the Darling), thus traveling in an almost straight line from Sydney to Normanton, on the Gulf of Carpentaria. It may be worth mentioning that the celebrated mines of Silverton, just within the western border of New South Wales, are connected by railway with Port Pirie, on Spencer's Gulf. It has been determined to push forward a road between Perth, in Western Australia, and Adelaide, South Australia. This route will place Sydney in direct communication with Perth by way of Silverton.—SYDNEY, *April 17, 1888.*

SELF-REPRODUCING FOOD FOR YOUNG FISH.

In a report made from this consulate in February last, an account was given of a new and highly successful process invented by Mr. Francois Lugin, of Geneva, for propagating in large quantities and at a nominal cost various species of *daphniæ*, *cyclops*, *limnæ*, and other species of minute *crustacea* upon which the young fry of various fish, notably the different species of *salmonidæ*, naturally feed during the months which immediately succeed the absorption of the umbilical sac. The statement was therein made that this new means of sustaining the young fish upon natural food until they attain sufficient size and strength to make their way successfully in open water had solved the hitherto most serious obstacle in fish-culture. This assertion has received recently such a striking and conclusive illustration that it is deemed worthy of record in these reports.

For a number of years past the Swiss Government and several private firms and individuals have made liberal and determined efforts to restock the exhausted lakes and streams of Switzerland. Until quite recently all these efforts proved practically abortive. The *Genevois* of September 13 says on this point: "Hitherto all these praiseworthy essays have had only a negative result; at all events, it is impossible to cite a single case of success. Tens and hundreds of thousands of small fry were hatched and turned into the waters of Geneva, among which were several species which it was hoped to acclimatize, but never a fish of these species has been caught or seen."

The same journal and several others of approximate dates published at Geneva and Annecy then relate the notable success which has recently been achieved by the system of Messrs. Lugin & Du Roveray, who own and manage the piscicultural establishment at Gremaz, in the French department of Ain. Near the end of December, 1886, Messrs. Lugin & Du Roveray received six thousand eggs of the North American *corégone* or *féra*, a species of salmon, which, in the absence of definite information, I suppose to be identical with the land-locked salmon of our northern lakes. At all events the fish is indigenous to the United States and was unknown in Europe until artificially propagated here. The eggs in question were duly hatched and the young fish kept in the tanks at Gremaz, fattening upon the abundant living food provided by the Lugin process, until the 24th of April last, at which time five thousand of them were put into the lake of Annecy, a beautiful sheet of water in the department of Haute Savoie. At this time these robust young fish had attained an average length of $5\frac{1}{10}$ inches and weighed about $1\frac{1}{2}$ ounces each. On the 1st of the present month of September, one hundred and thirty days after being thus planted, two of these fish were caught at different points in the lake, and were officially weighed and measured. They had attained a length of $8\frac{1}{4}$ inches, and weighed $4\frac{1}{4}$ ounces. They had attained a length in a little more

Commenting upon these facts, the Swiss journals regard the problem of restocking their depleted waters as substantially solved, and Mr. Lugrin has received from official sources many flattering congratulations.

Their fatal difficulty has hitherto been that, owing to the absence of available food and the intense cold of the Swiss lakes and rivers, most of which are fed from glaciers, the tender young alewives which have been turned in a few weeks after hatching have perished from cold, hunger, and other accidents, whereas the robust and vigorous yearlings, already of an age to catch living food and fight their way, have thriven with the extraordinary results above stated. It is estimated that a thousand well-grown and healthy yearlings are of more value for stocking open waters than a million of the delicate creatures of the tender age at which they have been hitherto planted, for want of means to properly feed them in confinement.—MARSEILLES, *September 27, 1888.*

FRANK H. MASON,
Consul.

MORMONS.

From time to time there have been articles in the public press referring to a possible exodus of Mormons from Utah to Mexico. These people have sent many colonies down into New Mexico and Arizona and of late years into old Mexico. Some of their most prominent men have carefully looked over lands for this purpose in Sonora and Chihuahua and considerable progress toward establishing strong colonies has been made. Of late there have been some criticisms by Mexican papers, both as to the Mexican authorities and the colonists. These have brought out a letter from Mr. Henry Eyring, the Mormon agent in Mexico, to the "Mexican Financier," which with editorial comment is printed by that paper in its issue of the 13th instant.

Mr. Eyring places the number of families at 150 and the land already purchased at 200,000 acres. Perhaps, as he declares, the "Church in Utah" is not making any effort to increase the colonies in Mexico. I am well satisfied, however, that there is now and has for over two years been a very strong effort by men who stand very close to and are of the "Church" to buy lands and get good concessions in Mexico. I believe they are likely to succeed and that within a few years they will number 200,000 in Northern Mexico. Mexico would certainly not be a loser in having these now arid, barren wastes settled up and made fertile, even if by Mormons.—MATA-MOROS, *October 29, 1888.*

WARNER P. SUTTON,
Consul-General.

[From the Mexican Financier.]

We publish in another column a letter from the official representative of the Mormons in this country. It will be noticed that he denies that the Mormon church in Utah is making any effort to increase the number of Mormon settlers in this country or to purchase more lands at present. Our correspondent admits that a prejudice against the Mormons exists among "less-informed persons," but he asserts that the Mormons coming to Mexico do not desire to meddle in politics, but only wish to mind their own business and become good citizens. We sincerely hope that this is their purpose, but even Mr. Eyring will not, we fancy,

MEXICO, *October 4, 1888.*

DEAR SIR: As one of your subscribers I always read your valuable publication with much interest, and admire the spirit of enterprise manifested in your columns. An article which appeared in your number of September 29th, respecting a probable immense Mormon immigration in the State of Chihuahua, I am thoroughly posted as to their present condition and future prospects of increase. I will state that said colonies number in the neighborhood of 150 families and occupy about 200,000 acres of ground, but there is no truth in the statement that 4,000,000 acres had been purchased by the Mormon community. While the small colonies which have been founded are reasonably prosperous, yet there is no probability of any sudden or rapid increase. The Church in Utah is making no effort whatever to increase the number of settlers in Mexico, nor to purchase more lands at present. These matters are left entirely to private enterprise, and the question as to whether many Mormons will come to settle in Mexico will depend much upon the success which the colonies now in existence will have. It is to strictly mind our own business, develop the resources of the country to the laws of the land, and not meddle with the politics of Government officials as well

Our policy is to strictly mind our own business, develop the resources of the country to the best of our ability, faithfully observe the laws of the land, and not meddle with the politics of the Republic. We appreciate the kindness shown us by many Government officials as well as the press of the Republic, and hope to merit the kindness manifested to us. We are not

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